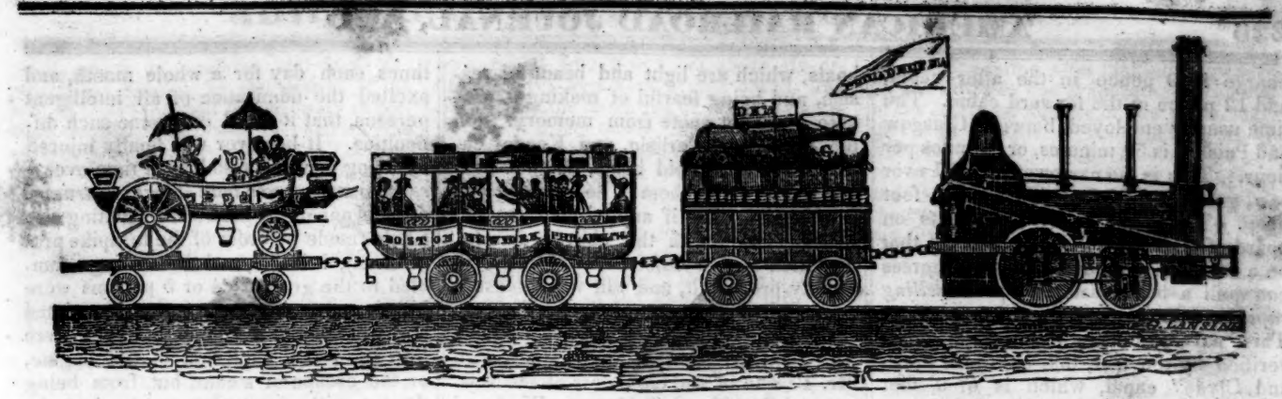

AMERICAN RAILROAD JOURNAL,
AND ADVOCATE OF INTERNAL IMPROVEMENTS.

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AMERICAN RAILROAD JOURNAL.

NEW-YORK, APRIL 18, 1835.

We lay before our readers a very interesting letter from an American gentleman in London, upon the subject of rapid travelling on canals, and of steam carriages on common roads. The writer will please accept our thanks for this, and other favors past; and permit our readers to thank him also, *in advance*, for other letters which they anticipate from him through the medium of the Journal.

A continuation of Mr. Mills' Report of his survey of the Rochester and Olean Canal will be found in this—it will be concluded in the next number.

☞ The books of the Company for a further subscription to the stock of the New-York and Erie Railroad, were opened on Wednesday. On the first day over $600,000 were subscribed, and on closing them it was found that the amount of subscription was over a million; which, with the $1,000,000 before subscribed, will enable them to commence operations at once, and to complete about 200 miles of the road. This will beyond question secure the construction of the road, notwithstanding the opposition of gentlemen in the more favored section of the State.

Charleston Railroad.—The southern Patriot says, the increasing travel and transportation on the Charleston Railroad, since the commencement of the present year, have exceeded the expectations of every one. The actual receipts, as is well observed, furnish the best evidence of the prosperity, and by comparison, of the increasing business of the road. These receipts are given for the first three months of the current year, and the corresponding period of last year, as follows :

1834.		1836.	
January,	$4,229	January,	$13,290
February,	8,174	February,	14,875
March,	11,988	March,	17,458
	$24,391		$45,624

This shews a great increase, indeed; the receipts nearly doubling, in the course of a single year. The number of passengers who travelled the road, during the year ending on the 1st of April, is stated 29,240.

Thus it is on the Charleston Road, and thus it *will* be on the New-York and Erie Road. The increase of business from improved facilities is not generally appreciated.

[*From the Baltimore American.*]

Washington Railroad.—We learn that a definitive and entirely satisfactory arrangement has been agreed upon between the Corporation of Washington and the Baltimore & Ohio Railroad Company in relation to the location of the railway within that city. A most liberal and accommodating spirit, we are informed, has been manifested by the city authorities there towards the Company, and under the provisions of the ordinance just passed, the Railroad Company are authorised to use steam as a moving power to the point desired by them, near the western foot of Capitol Hill, from which place the road will be continued across Pennsylvania avenue to the Canal

The satisfactory adjustment of this matter leaves the Co. from free any obstacle in the way of their immediate completion of the work, and the entire line both for graduation and masonry is already under contract, under a confident expectation that within three months the road will be open for travel.

The accomplishment of this work will bring the two cities into a very intimate intercourse, reciprocally beneficial. The trip will no doubt be regularly performed within two hours, and will afford a most delightful excursion—hundreds will daily avail of it, and we doubt but that the commercial as well as social relations of both cities will be greatly promoted. Indeed the whole Union has a deep interest in the work; and we venture to predict that the day is not distant when travellers leaving Washington in the morning will dine in Philadelphia, and arrive the same evening in New York.

Swift Passage-Boats on Canals, and Steam Carriages on Common Roads.

London, February 6, 1835.

To the Editor of the Railroad Journal:

Sir,—I observe you have published in your Journal of the 12th December last my letter to you relative to the locomotives plying on the common turnpike—the "City road"—from the neighborhood of the Bank of England to Paddington. Since I addressed you, I have been on a tour to the north, as far as Dundee, in Scotland, and visited most of the railways and manufactories of locomotive engines of the island.

When at Glasgow I visited the "Paisley" and the "Forth and Clyde" canals; and as our country is very much interested in canal navigation, some memoranda relative to the *swift passage boats* on those two canals may not be uninteresting to your readers.

First, of the "Paisley Canal," which has been the longest known, and is still most successful as regards quick travelling. This canal commences at Glasgow, and goes through Paisley (8 miles distant) to Johnston, where it terminates; 12 miles long; no lock in the whole distance. The boats are of iron, of one sixteenth of an inch thick, 70 feet long, 5 ft. 9 in. broad, and weigh 16 cwt. 14 lbs. This is the weight of the iron part alone. The total weight of the boat, including the wood work, (the cabins are of this material,) fixtures, &c. is 33 cwt.; and with 100 passengers, draws 19 inches aft and 18 inches forward. Two horses draw the boat in stages of four miles each; the pair of horses go only 12 miles per diem. There are four boats, which make six journeys each, or twenty-four journeys for the whole, each day. These boats have been running four years. They are generally full. They meet the greatest encouragement, and are very profitable to the proprietors, notwithstanding the fare is so very moderate. The charge is 6 pence, in the after cabin, and 9 pence in the forward, to Paisley, 8 miles; to Johnston, 12 miles, the

charge is 9 pence in the after cabin, and 12 pence in the forward cabin. The time usually employed between Glasgow and Paisley is 50 minutes, or 9¾ miles per hour. This is the narrowest canal I ever saw, generally 30 feet wide and 5 feet deep. The captains of the boats on board of which I travelled, told me that on a narrow canal, such as this, the horses can pull a boat easier, *when travelling rapidly*, than on one of greater section. This, paradoxical as it may appear, is verified by the fact, that on the "Forth and Clyde" canal, which is of 9 feet depth, and 68 feet breadth, the boats, which are of nearly the same dimensions (68 feet long, and 5½ feet broad,) as those on the Paisley canal, are drawn by *three* horses, with 70 passengers on board, and yet travel at about the same velocity as on the narrower and shallower canal. I asked these captains, and also a civil engineer of some eminence, whom I met on board, returning from Johnston, how they could account for this circumstance. Their reply was as follows: On a narrow canal, say 30 or 40 feet wide, the boat passing swiftly through the water, throws the wave against the shore, which being thrown back again against the boat, raises it up, and thus propels it. The wave strikes the boat about two thirds of its length from the bow. But if the canal were much wider, the boat would pass by before the *reflected wave* could reach the boat, and thus give it aid. I give this explanation nearly in the words of these captains, and am responsible only for the correctness of the report of what they told me. I hope this will meet the eye of our distinguished countryman, Gen. C. F. Mercer, Chairman of the Committee of Internal Improvements in the H. of R., who advocates with so much ability *broad* and *deep* canals for transportation, as far more economical than narrow canals. I will now finish what I have to say respecting the fast travelling on the "Forth and Clyde" canal.

This canal, as I have said above, is 68 feet broad by 9 feet deep, and the iron boats are 68 feet long and 5½ feet broad, and when light draw 8 inches water, but with 70 passengers draw 20 inches; this is when in a state of rest,—when in rapid motion they draw less. There are 3 horses employed to each boat, and the passengers who get into the boats at Port Dundas (Glasgow) are set down at Port Hopetown (Edinburgh) in 6¼ hours, a distance of 56 miles, or nearly 9 miles per hour. It is necessary to explain to you that the passengers go only a part of the distance on the "Forth and Clyde" canal. They start from Port Dundas and go to Port Downie, (the commencement of the "Union Canal,") a distance of 24½ miles, which includes 4 locks. In the next half mile are *eleven* locks, which are avoided by the passengers being conveyed in omnibuses to boats in the "Union Canal," which carry them on a level of 31 miles to Port Hopetown (Edinburgh). I regret that I did not take a memorandum of the cost of these iron boats, which are light and beautiful vessels, and being fearful of making a mistake I do not quote from memory. On the Lancaster, Carlisle, and Kendal canals, there are rapid boats, but not having travelled by them I do not give you any details. But if any of your readers feel an interest in the above remarks, and wish further information, I can with facility procure it, and will with pleasure communicate it to you.

Since my return from the north I have called on Mr. Hancock, in company with Mr. T., one of the engineers of the Boston and Providence Railway. We found that for the last two months the "Era" and the "Autopsy" have discontinued running, owing to the absence of Mr. Hancock in Ireland, whither he went with the "Era," for the purpose of ascertaining if he could profitably introduce locomotives on the roads of that country. He is now returned to London, and will, I am informed, recommence running these two engines on the metropolitan roads in a few days. Mr. T. and I also went to see Mr. Russell's steam carriage, recently arrived from Glasgow, which will in a few days ply regularly, in conjunction with others of this gentleman's make, between Hyde Park Corner, and Hammersmith (the commencement of the great western road out of London.) This carriage is by far the most tasteful of all the steam carriages I have seen. It is built exactly like the stage coaches of this country, except the dimensions are larger. The whole of the machinery is in the hind boot. The water and the coke are in a *tender*, or separate carriage on two wheels, behind the locomotive. This steam coach will carry six inside passengers sitting *vis-a-vis*, 14 outside on the roof, and six on the tender; total, 26 passengers. From the favorable terms in which I have heard Mr. Russell's engine spoken of, both here and in Glasgow, I feel a great curiosity to ride on it, and I will take advantage of the first opportunity to do so, and will report to you respecting it, as well as others which will no doubt be introduced as the spring advances. You may inquire, why did not Mr. R. remain in Glasgow? I will reply in nearly the words of the gentleman who shewed us this carriage. He said the prejudice against it was great, in consequence of the unfortunate accident by which 12 or 13 passengers were killed or wounded; that it was expedient to come to a distant part of the country. He told us, that for several months this engine plied between Glasgow and Paisley, and performed in a manner to give entire satisfaction; and in consequence, the stage coach proprietors and trustees of the road were alarmed lest this and others would gain so much in public estimation as to become regular coaches. They therefore resolved to drive it off, if possible. This they accomplished by *picking up* the turnpike, and putting fresh metal down in unusual and extraordinary quantities. Notwithstanding the road was made almost impassable, the engine was still continued, and plied regularly several times each day for a whole month, and excited the admiration of all intelligent persons, that it *could* overcome such difficulties. It however was finally injured by being driven for so long a time over a *road so much worse than it was constructed for*, and one of the hind wheels getting into a hole (made by order of the turnpike proprietors), it broke, and the carriage tumbled to the ground; 4 or 5 persons were killed, and 8 or 9 others seriously maimed and wounded. But none of them were hurt from the explosion of the engine, or the escape of steam, but from being thrown with great violence against the rough, new mettled road—the same kind of injury as would be received from a common stage coach breaking one of its wheels when travelling rapidly. I am informed that an action is brought by the owners of the steam carriage, as well as by several of the survivors and the friends of the deceased, killed by this melancholy event, against the road company, for obstructing the King's highway, and causing the injury and death of a number of persons, besides loss of property. Sanguine hopes are entertained that the guilty will be severely punished.

I forgot to tell you above, that the swell on the two canals, caused by the *quick* passage of the boats, is very inconsiderable.

I am, very respectfully, your obedient servant, GERARD RALSTON.

P. S.—The demand for railway locomotives is very great. I am sending nine to different parts of the United States, and both Mr. Robert Stephenson and Mr. Bury have orders to give them full employment for several months to come.

Report of Frederick C. Mills, Engineer, to the Honorable the Canal Commissioners of the State of New-York.

(Continued from number 14.)

For the purpose of acertaining the quality of stone, and the facility of procuring them, I examined the quarries within a reasonable distance of the canal. For the line from Genesee to Rochester, limestone will be used, and is found of a very superior quality near Avon Springs and at Caledonia. There is stone at Rochester which may be used in some parts of the work adjacent; but of an inferior character.

All the quarries from Mount Morris south, either on the Dansville side cut or in the vicinity of the main canal, are sand or grit stone varying in hue from pale blue to ash color. They are fine building stone, (of the kind) quarry easily, and in good shape for the construction of the mechanical work; they are abundant and generally convenient to the line, especially on that part of the route from Portageville to Olean.

It will be seen by referring to the detailed estimate of the different proposed kinds of locks, that the average cost of a composite lock of 10 feet lift will be $3,700.79, and of a hammered stone lock $5,193.98, making a difference in favor of the first description of lock of $1,493.19.

The difference between these two modes of construction is small when it is borne in mind, that the former will require a thorough repair of all the wood work connected with the chamber, once in 8 or 9

years, which is rendered still more expensive on account of the season of the year at which it would be necessary to perform the work, in order to obstruct the navigation as little as possible. The estimates throughout the line are made upon the latter mode of construction, which I think it would be well to adopt, at least between Mount Morris and Rochester, where the stone is particularly suitable, and where the suspension of the navigation would be sensibly felt. On the other parts of the line it may be found advantageous to substitute the composite lock, as with the exception of a few quarries on Canendea creek and in that vicinity, the stone is not of so good a quality as that below for making permanent hammered work, coping or quoins.

FEEDERS.

The question of supplying the summit of this canal, and the lower levels dependent upon it with water, is one of the most interesting and important, which now presents itself for consideration.

On referring to gauges taken by Judge Geddes in 1825, on the same summit, I was led to doubt, whether a quantity adequate to the demand could be obtained, and consequently devoted much time to a careful investigation of the subject.

From the best information I could obtain, a more favorable opportunity has not occurred for several years, of ascertaining the quantity of water which may at all times be relied upon, for the supply of the summit level, on account of the very low state of the water in all the streams at the time of gauging. For this purpose dams were thrown across the several streams, with apertures and sluices, in a form best calculated to concentrate and shape the volume of water for measurement.

The following statement shows the minium flow of running water, that may be commanded for the summit, viz:

	Cubic feet in a minute.
Ischua creek,	1,122.00
Lime lake,	258.00
Fish lake,	311.64
Beaver and Mud lakes,	244.80
Black creek,	33.56
Oil creek,	36.00
Little Oil and Swamp creek,	38.00
Total,	2,044.00

To conduct this water to the summit $9\frac{3}{10}$ miles of artificial feeders will be required, viz:

For Ischua creek,	2 miles	52	chains.
" Lime lake,	1 "	39	"
" Beaver and Mud lakes,	2 "	66	"
" Fish lake,	2 "	27	"

Which, together with the requisite dams and bulkheads, are estimated to cost $29,069.33.

The water from these lakes must be turned into Ischua creek, and occupy its channel to Ischua feeder, a distance of about 14 miles, through which it will be received into the summit level.

Lime, Beaver, Mud and Fish lakes, lie in the towns of Machias, Freedom and Farmersville, all within the compass of 7 miles.

Lime lake is $18\frac{1}{4}$ miles from the canal, and 156 feet above the summit level. Beaver lake is 209, Mud lake 218, and Fish lake $267\frac{1}{2}$ feet above the same point. The south end of Lime lake is separated from the Ischua, by a Tamerack swamp $1\frac{1}{2}$ miles in length, and rises on an average, $2\frac{1}{2}$ feet above the surface of the water in said lake. At the time of making the survey, I was informed that the water in this lake had been raised from 2 to 3 feet above its ordinary level, by a dam at the outlet, and that it was the intention of the proprietors to raise it 2 feet more. This may be done at small expense, and by excavating a channel to the Ischua, not exceeding 8 feet in depth, the lake may be drawn down 7 feet.

On the outlet, near the above mentioned dam, a grist-mill is being built, estimated to cost $5,000, and should the water of Lime lake be turned to the south, this mill will sustain an injury, and be a subject of claim for damages. The reservoir would average an area of 135 acres by 7 feet deep.

Fish lake is divided into two parts of unequal size and of different elevations; the upper and largest division is 6 feet above the other, and in the dry season has no discharge into the lower division, unless it be through a subterraneous passage.

Willard Law has a saw-mill at the outlet of the lower pond, and is building a dam 180 feet long, by which he designs raising the water so as to flow back into the upper pool $2\frac{1}{2}$ feet.

In order to use this lake as a reservoir, it is proposed to raise Mr. Law's dam 7 feet higher, which will give an area of 120 acres, from which 10 feet in depth may be drawn.

The outlet flows into Clear creek, a branch of Cattaraugus creek. Between Fish lake and Cattaraugus creek, there are 3 grist-mills, 3 saw-mills, and 2 card and clothing works, which in part receive their supply of water from this source, and should the water be used for a feeder or reservoir, claims for damages will ensue.

Mud lake lies about three miles south west of Fish lake, and upon the plan proposed, the waters of the latter may be drained 10 feet deep below its contemplated surface into the former, by a channel not exceeding $9\frac{1}{2}$ feet in depth, and $2\frac{7}{8}$ miles in length. On referring to the map, it will be seen, that the waters of these lakes will then pass on through a natural channel, and unite with those of Beaver lake near its outlet, whence they will be conducted into one of the branches of the Ischua, by an artificial feeder of 2 miles and 66 chains in length. Mud and Beaver lakes cover 50 acres each, and may be conveniently raised 6 feet higher, which will add about 70 acres to their area = 170 acres. On the outlets of these lakes, there are a few saw-mills and other works of small note, which will sustain some injury. The surface of country drained by them, is estimated at $20\frac{1}{4}$ square miles. Their principal and most permanent sources of supply, especially in the dry seasons, is from springs.

It is difficult to determine with much precision, the extent of damage that may be sustained by diverting the waters of these lakes from their natural channels. They flow north into Cattaraugus creek, and should there be any want of water at the mills on that stream, it may not be improper to suppose, that claims for damages will be presented; the most depressed of these lakes, is about 1,072 feet above Lake Erie.

The following statement shows the capacity of the lakes, and other streams available on the summit level; and the quantity that may be held in reserve by damming the lakes to be used during the dry season, which from my investigations on that subject, I have reason to believe, rarely if ever exceeds 140 days, showing also how much may be drawn per minute for the above time, after making allowance for the filtration and evaporation incidental to the increased surface of the lakes, together with the cost of construction, which will perhaps, be as well calculated to aid you in determining the relative advantages and feasibility of this plan of supplying the canal with water, as any thing I may say further on the subject.

Names of Feeders.	Pres't area in acres.	Cubic ft. of water after deducting loss by evaporation, &c.
Lime lake,	130	208.00
Beaver and Mud,	100	151.80
Fish lake,	82	236.64
Ischua feeder,		852.00
Black creek,		33.56
Oil creek,		36.00
Little Oil and Swamp creeks,		38.00
Total cubic feet per minute,		1,556.00

Names of Lakes.	Cubic feet of water after deducting loss by evaporation & filtration.	Cubic ft. per minute to discharge the reserve water in 140 days.
Lime lake,	41,004,117	208.30
Beaver lake,	22,241,734	110.30
Mud "	19,948,302	98.00
Fisk "	51,631,668	256.10
		667.70
Amount per feeders as above,		1,556.00
Total,		2,223.70
Cost of feeders and reservoirs,		$4,825.38

The summit level, and the levels principally dependent upon it for their supply of water, are together $30\frac{1}{4}$ miles in length, and (with the exception of a few points where lining must be used) the material of which this portion of the canal will be constructed, is of the best quality for making tight banks, and on that part of the line extending through the deep cutting in the summit swamp very little, if any, waste of water will occur, except what is occasioned by evaporation.

It now remains to determine what quantity of water will be adequate to the demand in this portion of the canal.

John B. Jarvis, Esq. gives 437 cubic feet per minute per mile, as the probable quantity of water that will be required to supply the Chenango canal, from the summit level. This estimate is predicated upon a quantity sufficient to pass 20 boats each way every 24 hours, allowing 20 per cent. for waste from the locks, and 100 cubic feet per minute per mile for filtration and evaporation.

In referring to this subject in your annual report to the Legislature in 1834, I find the Commissioners were apprehensive that the amount allowed for filtration and evaporation on the Chenango canal, would be found insufficient; but that they were "inclined to the opinion that with proper care in guarding against the waste of water, 100 cubic feet per mile per minute for leakage, filtration and evaporation would be a safe estimate for the western and middle sections of the Erie canal." If necessary I might go into detail on this subject, and state the results of a variety of experiments made in this and in other countries. Those, however, upon which much reliance may be placed with regard to our canals, have been principally made in the States of New-York, Pennsylvania and Ohio, and as those together with my own estimates and experience in this matter, only go to corroborate and confirm the opinion advanced by the Commissioners, I deem it sufficient to

mention, that from the knowledge I have of the materials composing the banks of the Erie canal, the soil through which this 30¼ miles of the Rochester and Olean canal passes, will not suffer by comparison, and should the work be performed with proper care, I am fully of opinion that no more water will be required for leakage, drainage and evaporation per minute per mile, than was found necessary for the same purpose on the twenty miles of canal west of Rochester aqueduct, as gauged by Mr. Bates in 1824.

It results then, that by a careful construction of the work contemplated, the estimated 100 cubic feet per minute per mile, will be a safe allowance for filtration and evaporation.

Now assuming an average of 28 boats* to pass each way from the summit every 24 hours, provision must be made for a maximum of 60 lockages of water per day, and as the locks which govern this question are 7 feet lift each, the quantity required will be 367½ c. feet; to this add 25 per cent. for waste from the locks, and we have 459 c. feet for lockage water per minute.

Hence it appears that the quantity of water requisite to supply the summit and south to Olean, and then north to Ketchum's, (where it is proposed to take in the Genesee river as a feeder,) is,

For filtration and evaporation 30¼ miles, . . .	3,025	c. ft.
For lockage water per minute,	459	"
Total, . . .	3,484	"
The sources of running water as heretofore contemplated, . .	2,044	
Deduct loss by filtration and evaporation in conducting said water on to summit, .	488	
	1,556	"
Deficiency, .	1,928	"
To make up this quantity it becomes necessary to resort to reservoirs, three of which are artificial and four natural ponds or lakes. The lakes will furnish per minute, (as seen in the preceding table,) . . .	667.70	
	1,260.30	

1,260.30 cubic feet per minute still remain to be made up entirely from artificial reservoirs.

The subject of supplying canals from these sources has been treated on at large in relation to the Chenango canal, and presuming that I can present nothing new, or that would aid the Commissioners in determining the practicability of the plan, I will briefly state the result of my survey, the capacity of the reservoirs, and the plan upon which the estimate is made.

The Ischua creek reservoir is located 3 miles from the summit level, near the head of the feeder at Farewell's mill dam. The present dam is 4 feet high and 9 feet above the bottom of the canal. It now overflows about 15 acres, the principal part of which is covered with timber. The creek has an average fall of about 12 feet to the mile. The hills on either side are high and precipitous. The width of the valley at the dam is 14 chains, and for the length of the reservoir average 15 chains. By raising the mill dam 12 feet higher, the water will set back 1¼ miles, covering an area of 180 acres. The soil is clayey, of an impervious character.

The road up the valley will be overflowed by the pond, making it necessary to build a new one along the side of the hill, for 20 chains in length.

An allowance must be made for damages to Farewell's saw-mill, which is supplied with water from this source.

This reservoir has a drainage into it of 65 square miles of country, and taking one-fifth of the down fall water, (36 inches,) as the quantity which will drain off, we have 1,088,825,760 cubic feet, a quantity more than sufficient to fill the reservoir eleven times.

I proposed building two reservoirs on Oil creek, which crosses the canal about 2 miles north of Cuba. At Cady's mill the valley bordering on the creek is contracted to 5 chains in width, by the near approach of the high grounds, at which point it is contemplated to raise an embarkment and dam 12 feet in height above the mill pond. Cady's dam overflows about 12 acres, which will be increased by adding to the height of the dam to 120 acres, affording a spacious reservoir at comparatively small expense. Immediately above is the site for upper Oil creek reservoir: this artificial pond will cover an area of 260 acres, the principal part of which is a swamp of little value. The plan contemplates a dam and embankment 12 feet high and 25 chains in length, with the requisite gates and fixtures for drawing water and passing surplus.

Baldwin's saw-mill near the head of the lower reservoir will be destroyed, for which allowance must be made, and also for damages that will occur to Cady's mills at the lower dam. The drainage of 9,817 acres will descend into these reservoirs, and (as will be seen in the subjoined statement showing the capacity and cost of the artificial reservoirs,) is equal to 256,577,112 cubic feet.

Reservoirs.	Am't of cubic feet contained in reservoir after deducting 8 per cent.	Cubic feet per minute to discharge the reservoir in 140 days.	Cost.
Ischua cr'k,	86,543,432	492.20	$6,767 65
Lower Oil,	57,708,288	284.20	9,215 00
Upper "	125,034,624	620.20	9,080 00
Total,		1,396.60	$25,062 65

Area of drainage in acres of Ischua creek reservoir,	41,660
That of Upper creek "	9,817

It appears, then, that from the above sources, we may have a surplus over and above the quantity required of 136 cubic feet per minute, which is more than sufficient to make up any deficiency that may arise from the location of the ponds or reservoirs on the streams proposed for feeders.

The Ischua creek valley, on account of the extent of drainage, its peculiar formation, and the impervious character of the soil, is extremely well adapted to the multiplication of reservoirs. I would therefore remark, that in case any contingency should render it necessary to resort to other sources than those specified as adequate to the supply wanted, additional reservoirs may be constructed immediately above the one in contemplation at Farewell's mill-pond.

The natural flow of water from Lime, Beaver, Mud, and Fish lakes, as before stated, is 814.44 cubic feet per minute. Their capacity will be increased by raising dams and embankments 667.70 cubic feet per minute for 140 days, (in the dry season,) equal in all to 1,482.14 cubic feet in a minute. Three artificial reservoirs, each of the same capacity of the one in contemplation at Farewell's pond, would afford 1,476.60 cubic feet per minute, and should the commissioners think it best to resort to this plan instead of using the waters of the lakes, such reservoirs can be constructed above the one proposed on Ischua creek, at an expense not very much exceeding the estimated cost of bringing the same amount of water from the lakes above mentioned.

For estimates in detail of all the reservoirs and feeders connected with the summit level, see statement 1.

From the point where the Genesee river is received into the canal to Mount Morris, is a distance of 37 miles and 35 chains. Caneadea and West Koy creeks are also taken in by means of dams and short feeders, the creeks being previously crossed by the canal in aqueducts.

Cold creek, yielding 174 cubic feet per minute, could be introduced if absolutely necessary; but as the supply of water will be abundant, I have not thought it proper to incur the expense that would be necessary for that object. The whole amount of water obtained from these several sources is 9,123 cubic feet per minute. Locks of larger lift occur from the above point to Rochester than on that portion of the route supplied from the summit, and will consequently require a proportional increase of lockage water; to provide for this, and for combinations at Round Flat and Mount Morris, I have allowed 1,147½ cubic feet per minute. The quantity required as far as Mount Morris, will be 4,891½ cubic feet per minute, leaving an amount of water over and above the demand, of 4,231½ cubic feet per minute.

Although the quantity of water necessarily wasted is very great, where so many locks occur together, as in the vicinity of Mount Morris, yet it cannot be questioned that so large a surplus as that above mentioned will be fully adequate to the supply of any contingencies arising from that cause.

Some damage will be sustained by the saw-mills upon the Caneadea and West Koy creeks in consequence of the water being taken from them in the dry season, and its passage through the race being partially obstructed at all times. No injury will be sustained by the mills at Mixville, situated at the West Koy Falls, the water being taken in below them and not setting back far enough to flood their wheels. At the point where the Genesee river is taken in, I propose to construct a guard-lock, for the purpose of receiving the lumber, produce, &c. &c., of the country around its head waters. This lock will be about two miles north of the village of Buttstown, where are several saw-mills and a sash factory, and from which, as also from many other places on the river, considerable quantities of lumber may be expected to pass annually through the canal. No other guard-locks, except those at Mount Morris, will be necessary, unless the Genesee river should be taken in as a feeder at some other point, which the following statements of the quantity of water furnished and required on both sides of the river, between Mount Morris and Rochester, will show to be unnecessary. Upon the east side, the streams which will be received into the canal are outlets of the Conesus, Hemlock, and other lakes, mentioned in a previous part of this report, which afford, together with that al-

* This is quadruple the number necessary to do the present business of the canal; but it has been thought proper to make provision for a large increase of trade.

ready in possession, 12,434 cubic feet per minute; the distance supplied from these sources being in all a fraction less than 76 miles, showing a surplus beyond the required amount of 3,732½ cubic feet per minute.

The stream on the west side, proposed as a feeder, is Allen's creek, 12¼ miles south of Rochester. The total length of canal to be supplied on this route is 74 $\frac{88}{100}$ miles. The quantity of water at command is 12,509 cubic feet per miuute; the quantity required is 10,531, showing an excess of the amount furnished over that required, of 1,978 cubic feet per minute. Allen's creek is crossed by an aqueduct with a lock of 7 feet lift connected with it, and the water is taken from the creek upon the lower lock. Notwithstanding the precaution of bringing in the water upon a level, which is depressed as much as is consistent with the safety of the work, it will be impossible to avoid injuring the hydraulic privileges at Scottsville. The water in the proposed feeder dam will rise about 4 feet above the present level of their tail races, reducing the head and fall to 14¾ feet, which will give rise to a claim for damages, if the canal should be constructed upon this side of the river. The hydraulic works consist of 2 flouring mills with 7 run of stones, 1 sawmill, 1 turning lathe, and 1 stave-mill.

Many circumstances combine to render it advantageous to take out a feeder from the Genesee river at Mount Morris, especially if the canal should be located upon the west side; among which, the necessity of drawing the whole supply of water for the canal, below Mount Morris, through the locks in that vicinity, is not the least important. Should the route upon the east side of the river be adopted, the same difficulty in relation to supplying the lower section of the canal would exist, and though there would be no absolute necessity of taking in a feeder, yet it would place the work out of danger of any disagreeable consequences which might result from neglect in passing through the necessary supply of water.

I have mentioned in a preceding part of this report, that in case of taking in the Genesee river at Mount Morris, it will be necessary for the State to take the control of the water now used there for hydraulic purposes. Upon the east side of the river damages would ensue in taking in the outlet of the Honeyoye lake, to the mills built thereon; for on account of the great height which it is necessary to build the canal to keep out of reach of the floods, the water to supply it will seriously curtail the head and fall of these mills by being dammed up against the wheels.*

In the foregoing observations nothing has been said, nor have any calculations been made, upon the supply of water which will be furnished from the Canascraga creek by means of the Dansville side cut. Upon this head I deem it sufficient to remark, that the 15 miles from Dansville to Mount Morris will require 2,057 cubic feet per minute, to supply which, the Canascraga furnishes, below the confluence of mill creek, 2,458 cubic feet, leaving a surplus of 401 cubic feet per minute. The estimates for the necessary structures to supply the canal with water on the summit, with the estimates of the [illegible], excepting those [illegible]. [illegible] will be found in the estimates of sections [illegible] upon which they

RECAPITULATION.

First Statement.

Aggregate cost from Olean to Mount Morris, as per statement K,	$1,197,159 98
Mount Morris to Rochester, via east side of the river,	406,607 67
Feeders and reservoirs not included in the estimates for sections, as per statement I,	59,888 03
Dansville side cut,	156,604 25
	$1,802,259 98
Add for contingencies and superintendence, 10 per cent.,	180,225 99
Total,	$1,982,485 92

Second Statement.

Aggregate cost from Olean to Mount Morris, including feeders and reservoirs,	$1,257,048 01
Mount Morris to Rochester, via west side of river,	305,087 85
Dansville side cut,	156,604 25
	$1,718,740 11
Add for contingencies, &c. 10 per cent.,	171,874 01
Total with hammered stone locks,	$1,890,614 12

Third Statement.

Should composite locks be substituted in all cases except where combinations occur, deduct $150 per foot lift on the amount of lockage, (704½ ft.) plus 10 per cent.,	116,242 00
Total with part composite locks,	$1,774,372 12

[For the Statement relative to the "Routes of Communication to the Ohio Valley," proposed and in use, from the Atlantic Cities, see No. 12 of the Railroad Journal, where it was erroneously stated as being extracted from Mr. Johnson's Report, instead of Mr. Mills'.]

From the best information I could obtain on the subject, boats of light burthen can ascend and descend the Allegany river for about three months in the year; and from calculations made whilst at Olean, predicated upon statements made by respectable gentlemen entitled to credit, and well acquainted with the matter, property may be transported down the river to Pittsburgh for 25 cents per 100 lbs., and up to Olean $1.20 per 100 lbs. The average time which would probably be required to make a trip from Olean to New-York, would be about 9½ days, and to return, about 10 days.

I am informed that when the Ohio river is in navigable order, the price of freighting from Pittsburgh to Portsmouth, is 20 cents per 100 lbs., which, a large portion of the trade, instead of passing the Ohio and Erie canal to New-York, passes to and from Philadelphia by means of the Pennsylvania canal road. Light goods can thus be carried for 68 cents less. [illegible] cents less than by the canal.

can exist of the superior advantages of this route for goods going west, so long as the City of New-York is preferred by those making purchases for the western market.

To exhibit the opinion entertained of this improvement by persons interested in other avenues to the Ohio river, I subjoin an extract from the Appendix to report No. 414, of Congressional Documents, collected by the Hon. Chas. Fenton Mercer, M. C.:

"The excess in length of the present northern (Erie canal,) over the proposed southern (Chesapeake and Ohio,) route from New-York to Pittsburgh, cannot be reduced to less than 175 miles; a distance which exceeds any possible reduction of the former that can be hereafter effected, by connecting the Genesee and Allegany rivers, a work in itself of great public utility, since it would not only cut off more than 100 miles of the distance between New-York and the head of the Ohio river, by the northern route, but save two transshipments, and the hazard of the lake navigation, as well in peace as in war; and so far greatly contribute to the value of the Erie canal, in a national as well as local view."

To be continued.]

Saratoga and Woshington Railroad.—A charter for this Railroad, extending from Saratoga Springs to Whitehall, was procured at the last session of the Legislature, with a capital stock of *six hundred thousand dollars.* The books of subscription were opened in this city a few days since for the stock of this road, and the whole amount of the capital was promptly subscribed. We are informed that it is the intention of the Company to commence the construction of the road without delay. When this contemplated railroad shall be completed, it will form—in connection with the steamboat lines on the St. Lawrence river and Lake Champlain, and with the railroad now nearly finished between St. Johns and Laprarie—an uninterrupted communication by steam between New York and this city and the great commercial emporiums of Canada, Quebec and Montreal. The advantages which this road will possess over every avenue to the South from Canada, must unquestionably secure to it almost entirely the increasing travel of the north, and must make the investment a very profitable one to the stockholders.—[Troy Whig.]

Aurora and Buffalo Railroad.—We learn from the Whig of yesterday, that at a meeting of the Board of Directors of this Company held on the 30th ult. Mr. *William B. Gilbert*, was appointed Engineer of the Road, who immediately enters upon his duties. A portion of the Road has been already located, on which operations are to commence forthwith.

The preceding paragraph is taken from the Buffalo Daily Commercial Advertiser. It indicates prosperity and enterprise amongst the inhabitants of that flourishing *inland city*; and it shows also the immense importance of internal improvements, to the State,—as it may, without fear of contradiction, be asserted, that, but for the construction of the Canal, there would not, in years yet to come, have been a *city* a Buffalo "*Daily* Commercial

[illegible] *line of the canal* have derived beyond our ability to estimate, [illegible] works already made by the ask, are the residents [illegible] giving others equal [illegible] receive the [illegible] every [illegible] general

M.

[From the forthcoming number of the Mechanics' Magazine and Register of Inventions and Improvements.]

SCIENCE OF PROJECTILES.—This is the name for that branch of mechanical philosophy which treats of the motion of bodies projected from the surface of this earth, and influenced by the action of terrestrial gravity.

Any body projected from the mouth of a cannon must describe a conic section, having the centre of the earth in one focus, and it will describe round that focus areas proportional to the times. And it might easily be demonstrated, that if a velocity of projection were to exceed 36,700 feet in a second, the body, (if not resisted by the air,) would describe a hyperbola; if it were just 36,700, it would describe a parabola; and if less than this, it would describe an ellipsis. If projected directly upwards, in the first case, it would never return, but proceed forever, its velocity continually diminishing, but never becoming less than an assignable portion of the excess of the initial velocity above 36,700 feet in a second; in the second case, it would never return, its velocity would diminish without being extinguished; in the third case, it would proceed till its velocity was reduced to an assignable portion of the difference between 36,700 and its initial velocity, and would then return, regaining its velocity by the same degrees, and in the same places, as it lost it. These are necessary consequences of a gravitating force directed to the centre of the earth, and inversely proportional to the square of the distance. But, in the greatest projections that we are able to make, the gravitations are so nearly equal, and in directions so nearly parallel, that it would be ridiculous affectation to pay any regard to the deviations from equality and parallelism. A bullet rising a mile above the surface of the earth loses only $\frac{1}{2000}$ of its weight, and a horizontal range of four miles makes only four minutes of deviation from parallelism.

Let us therefore assume gravitation as equal and parallel. The errors arising from this assumption are quite insensible in all the uses which can be made of this theory.

The theory itself will ever be regarded with some veneration and affection by the learned. It formed the first fruits of mathematical philosophy. Galileo was the first who applied mathematical knowledge to the motions of free bodies, and this was the subject on which he exercised his fine genius.

Gravity must be considered by us as a constant or uniform accelerating or retarding force, according as it produces the descent, or retards the ascent, of a body. A constant or invariable accelerating force is one which produces a uniform acceleration; that is, which in equal times produces equal increments of velocity, and therefore produces increments of velocity proportional to the times in which they are produced. Forces are of themselves imperceptible, and are seen only in their effects, and they have no measure but the effects or what measures the effect; and every thing which we can discover with regard to those measures, we must affirm with regard to the things of which we assume them as the measures. Therefore, the motion of a falling body, or of a body projected directly downwards, is uniformly accelerated, and that of a body projected directly upwards is uniformly retarded: that is, the acquired velocities are as the times in which they are acquired by falling, and the extinguished velocities are as the times in which they are extinguished.

Cor. 1. If bodies simply fall, not being projected downwards by any external force, the times of the falls are proportional to the final velocities; and the times of ascents, which terminate by the action of gravity alone, are proportional to the initial velocities.

2. The spaces described by a heavy body falling from rest, are as the squares of the acquired velocities; and the differences of these spaces are as the differences of the squares of the acquired velocities; and, on the other hand, the heights to which bodies projected upwards will rise, before their motions will be extinguished, are as the squares of the initial velocities.

3. The spaces described by falling bodies are proportional to the squares of the times from the beginning of the fall; and the spaces described by bodies projected directly upwards, are as the squares of the times of the ascents.

4. The space described by a body falling from rest is one half of the space which the body would have uniformly described in the same time with the velocity acquired by the fall; and the height to which a body will rise, in opposition to the action of gravity, is one half of the space which it would uniformly describe in the same time with the initial velocity.

In like manner the difference of the spaces which a falling or rising body describes in any equal successive parts of its fall or rise is one half of the space which it would uniformly describe in the same time with the difference of the initial and final velocities.

This proposition will be more conveniently expressed for our purpose thus:

A body moving uniformly during the time of any fall with the velocity acquired thereby will in that time describe a space double of that fall; and a body projected directly upwards will rise to a height which is one half of the space which it would, uniformly continued, describe in the time of its ascent with the initial velocity of projection.

5. It is a matter of observation and experience, that a heavy body falls rather more than sixteen feet in a second of time, and therefore acquires the velocity of thirty-two feet per second. This cannot be ascertained directly with the precision that is necessary. A second is too small a portion of time to be exactly measured without some mechanical contrivance; but it is done with the greatest accuracy by comparing the motion of a falling body with that of a pendulum. The time of a vibration is to the time of falling through half the length of the pendulum as the circumference of a circle is to its diameter. The length of a pendulum can be ascertained with great precision, and it can be lengthened or shortened till it makes a given number of vibrations in a day.

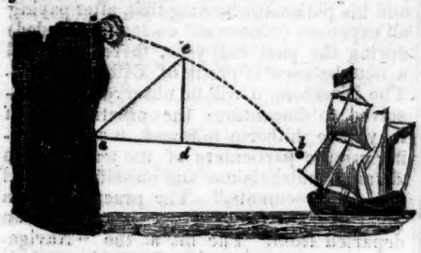
Atwood's machine, which has already been described under that article, furnishes us with a very beautiful mode of illustrating the velocity which a falling body acquires in a given time. And here we may digress for an instant to point out the advantages which our modern schools of science and public lecture rooms possess over those in the "olden time." Newton is said to have had his attention directed to the subject of gravitation by the fall of an apple, and if he had desired to illustrate the subject familiarly, he must still have pursued the same course with his pupils. Instead, however, of an apple or stone descending from the roof of the lecture room, with the velocity of the wind, we now see a large brass weight, that the eye can easily follow, passing over a graduated scale, and exactly measuring the velocity it has acquired in every part of its path.

As all other forces are ascertained by the accelerations which they produce, they are conveniently measured by comparing their accelerations with the acceleration of gravity. This, therefore, has been assumed by all the later writers on mechanical philosophy, as the unit by which every other force is measured.

This has made philosophers so anxious to determine with precision the fall of heavy bodies, in order to have an exact value of the accelerating power of terrestrial gravity. Now, we must here observe, that this measure may be taken in two ways: we may take the space through which the heavy body falls in a second; or, we may take the velocity which it acquires in consequence of gravity having acted on it during a second. The last is the proper measure. The action of gravity has changed the state of the body—and this is effected by giving it a determination to motion downward; this both points out the kind and the degree or intensity of the force of gravity. The space described in a second by falling is not an invariable measure; for in the successive seconds, the body falls through 16, 48, 80, 112, &c. feet, but the changes of the body's state in each second is the same. At the beginning it had no determination to move with any appreciable velocity; at the end of the first second it had a determination by which it would have gone on for ever (had no subsequent force acted on it) at the rate of thirty-two feet per second. At the end of the second second it had a determination by which it would have moved for ever at the rate of sixty-four feet per second. At the end of the third second it had a determination by which it would have moved for ever at the rate of ninety-six feet per second, &c. &c. Thus, the difference is a determination to the rate of thirty-two feet per second. This is therefore constant, and the indication and proper mea

sure of the constant or invariable force of gravity.

It would be foreign to our present purpose to enter into any very elaborate illustration of the path of a projectile as applied to the science of gunnery, and it may be enough to furnish our readers with a familiar view of the general effects of gravitation as applied to the subject.



In the above diagram *a d b* represent the horizontal path of a ball supposed to be projected from the point *a*. Now, in this case we suppose the existence of no gravitating force; but, as there is a continual tendency in all bodies to approach towards the earth's surface, we must place the cannon at *e* if we wish the ball to arrive at *b*. This is a necessary result of the law which draws all bodies towards the earth's centre. Instead of placing the piece at the elevation shown in the diagram, the gunner elevates the point of his piece, and by giving it an ascending range ensures his object with equal certainty. Thus he would direct his piece from *a* in the direction of *c*, and although it would not take precisely the path *a c*, yet it would go for a certain distance nearly in a straight line, and then change its path till it arrived at *b*, a little beyond which it would strike the ship. The British sailors, from long experience and much practice, rather than from a high degree of science, have obtained considerable precision in the range of their guns.

In the practice of cannonading it is necessary to come as near as possible to the object aimed at, as the hurry of service allows no time for geometrical methods of pointing the piece after each discharge. The gunner either points the cannon directly to the object, when within 200 or 300 yards of it, in which case he is said to shoot point blank; or, if at a greater distance, he estimates to the best of his judgment the deflection corresponding to his distance, and points the cannon accordingly. Or lastly, when the intention is not to batter, but to rake along a line occupied by the enemy, the cannon is elevated at a considerable angle, and the shot discharged with a small force, so that it drops into the enemy's post, and bounds along the line. In all these services the gunner is directed by his practice.

The principal use of the parabolic theory is to direct the bombardier in throwing shells. With these it is proposed to break down or set fire to buildings, to break through the vaulted roofs of magazines, or to intimidate and kill troops by bursting among them. These objects are always under cover of the enemy's works, and cannot be touched by a direct shot. The bombs are therefore thrown upwards, so as to pass over the defences and produce their effect.

These shells are frequently many hundred pounds in weight. The mortars from which they are discharged must, therefore, be very strong, that they may resist the explosion of gunpowder which is necessary for throwing such a mass of matter to a distance. Very little change can be made in their elevation, and therefore their ranges are regulated by the velocities given to the shell. These again are produced by the quantities of powder in the charge; and experience (confirming the best theoretical opinions that we can form of the subject) has taught us that the ranges are nearly proportional to the quantities of powder employed, only not increasng quite so fast. This method is much easier than by differences of elevation; for we can select the elevation which gives the greatest range on the given plane, and then we are certain that we are employing the smallest quantity of powder with which the service can be performed: and we have another advantage, that the deviations which unavoidable causes produce in the real directions of the bomb will then produce the smallest possible deviation from the intended range.

The only other circumstance in which we are interested is the time of the flight. A knowledge of this is necessary for the bombardier, that he may cut the fusees of his shells to such length as that they may burst at the very instant of their hitting the mark.

In making experimental observations on the path of a projectile, a jet of water or mercury gives us the finest example, because we have the whole parabola exhibited to view in the simultaneous places of the succeeding particles. Yet even in these experiments a deviation can be observed. When the jet is made on a horizontal plane, and the curve carefully traced on a perpendicular plane held close by it, it is found that the distance between the highest point of the curve and the mark is less than the distance between it and the spout, and that the descending branch of the curve takes a more perpendicular direction than the ascending branch. And this difference is more remarkable as the jet is made with greater velocity, and reaches to a greater distance. This is evidently produced by the resistance of the air, which diminishes the velocity, without affecting the gravity of the projectile. It is still more sensible in the motion of bombs. These can be traced through the air by the light of their fusee; and we see that their highest point is always much nearer to the mark than to the mortar on a horizontal plane.

The greatest horizontal range on this plane should be when the elevation is 45 degrees. It is always found to be much lower.

The ranges on this plane should be as the sines of twice the elevation. A ball discharged at the elevation of 19°·5′, ranged 448 yards; at the elevation of 9°·45′, 330 yards. It should have ranged by theory 241 yards.

The range at an elevation of 45° should be twice the impetus. And it has been found by experiment that a musket ball, discharged with the usual allotment of powder, has the velocity of 1700 feet in a second. This requires a fall of 45,·156 feet, and the range should be 90,·312, or 17¼ miles; whereas it does not much exceed half a mile. A twenty-four pound ball, discharged with sixteen pounds of powder, should range about 16 miles; whereas it is generally short of three miles. As the motion of projectiles is performed in the atmosphere, it follows that the air is displaced or put in motion. Whatever motion it acquires must be taken from the bullet. The motion communicated to the air must be in the proportion of the quantity of air put in motion, and of the velocity communicated to it. If, therefore, the displaced air be always *similarly displaced*, whatever be the velocity of the bullet, the motion communicated to it, and lost by the bullet, must be proportional to the square of the velocity of the bullet and to the density of the air jointly. Therefore, the diminution of its motion must be greater when the motion itself is greater, and in the very great velocity of shot and shells it must be prodigious. It appears from repeated experiments, that a globe of four inches and a half in diameter, moving with the velocity of twenty-five feet in a second, sustained a resistance of 315 grains, nearly three-quarters of an ounce. Suppose this ball to move 800 feet in a second, that is, thirty-two times faster, its resistance would be 32×32 times three-quarters of an ounce, or 768 oz., or 48 lbs. This is four times the weight of a ball of cast iron of this diameter; and if the initial velocity had been 1600 feet per second, the resistance would have been at least sixteen times the weight of the ball. It is indeed much greater than this.

This resistance, operating constantly and uniformly on the ball, must take away four times as much from its velocity as its gravity would do in the same time. We know that in one second gravity would reduce the velocity 800 to 768, if the ball were projected straight upwards. This resistance of the air would therefore reduce it in one second to 672, if it operated uniformly; but as the velocity diminishes continually by the resistance, and the resistance diminishes along with the velocity, the real diminution will be somewhat less than 128 feet. We shall, however, see afterwards, that in one second its velocity will be reduced from 800 to 687. From this simple instance, we see that the resistance of the air must occasion great deviation from parabolic motion. In order to judge accurately of its effect, we must consider it as a retarding force, in the same way as we consider gravity.

If we consider this resistance as a retarding force, we can compare it with any other such force by means of the retardation which it produces in similar

circumstances. We may compare it with gravity by comparing the diminution of velocity which its uniform action produces in a given time with the diminution produced in the same time by gravity. But we have no opportunity of doing this directly; for when the resistance of the air diminishes the velocity of a body, it diminishes it gradually, which occasions a gradual diminution of its own intensity. This is not the case with gravity, which has the same action on a body in motion or at rest, so that we cannot observe the uniform action of the air's resistance as a retarding force. We must therefore substitute some other way of making the comparison. We can state them both as dead pressures. A ball may be fitted to the rod of a spring steelyard, and exposed to the impulse of the wind. This will compress the steelyard to the mark 3, for instance. Perhaps the weight of the ball will compress it to the mark 6. We know that half this weight would compress it to 3. We account this equal to the pressure of the air, because they balance the same elasticity of the spring. And in this way we can estimate the resistance by weights whose pressures are equal to its pressure, and we can thus compare it with other resistances, weights, or any other pressures. In fact, we are measuring them all by the elasticity of the spring. This elasticity in its different positions is supposed to have the proportions of the weights which keep it in these positions. Thus we reason from the nature of gravity, no longer considered as a dead pressure, but as a retarding force; and we apply our conclusions to resistances which exhibit the same pressures, but which we cannot make to act uniformly.

The most elaborate mathematical calculations lead us to the following important results.

1. Balls of equal density, projected with the same elevation, and with velocities which are as the square roots of their diameters, will describe similar curves. This is evident, because in this case the resistance will be in the ratio of their quantities of motion. Therefore, all the homologous lines of the motion will be in the proportion of the diameters.

2. If the initial velocities of balls projected with the same elevation are in the inverse sub-duplicate ratio of the whole resistances, the ranges, and all the homologous lines of their track, will be inversely as those resistances.

These theorems are of considerable use, for by means of a proper series of experiments on one ball projected with different elevations and velocities, tables may be constructed which will ascertain the motion of an infinity of others.

We shall conclude this article by giving two or three tables, computed from the principles established above, and which serve to bring into one point of view the principal circumstances of the motion in a resisting medium. In a series of experiments made at Woolwich, which were continued for several days, not only do the experiments of one day differ among themselves, but the mean of all the experiments of one day differs from the mean of all the experiments of another no less than one fourth of the whole. The experiments in which the greatest regularity may be expected, are those made with great elevations. When the elevation is small, the range is more affected by a change of velocity, and still more by any deviation from the supposed or intended direction of the shot.

I.	II.	III.
2	92	420
4	121	428
9	159	456
18	200	470
32	272	479

The first table shows the distance in yards to which a ball projected with the velocity of 1600 will go, while its velocity is reduced one tenth, and the distance at which it drops sixteen feet from the line of its direction. This table is calculated by the resistance observed in Mr. Robins' experiments. The first column is the weight of the ball in pounds. The second column remains the same whatever be the initial velocity, but the third column depends on the velocity. It is here given for the velocity which is very usual in military service, and its use is to assist us in directing the gun to the mark. If the mark at which a ball of twenty-four pounds is directed is 474 yards distant, the axis of the piece must be pointed sixteen feet higher than the mark. These deflections from the line of direction are nearly as the squares of the distances.

I.	II.	III.	IV.	V.
200	416	349	106	360
400	1664	1121	338	1150
600	3740	1812	606	1859
800	6649	2373	866	2435
1000	10390	2845	1138	2919
1200	14961	3259	1378	3343
1400	20364	3640	1606	3734
1600	26597	3950	1814	4050
1800	33663	4235	1992	4345
2000	41559	4494	2168	4610
2200	50286	4720	2348	4842
2400	59846	4917	2460	5044
2600		5106	2630	5238
2800		5293	2762	5430
3000		5455	2862	5596
3200				5732

The next table contains the ranges in yards of a twenty-four pound shot, projected at an elevation of 45°, with the different velocities in feet per second expressed in the first column. The second column contains the distances to which the ball would go in vacuo in a horizontal plane; and the third contains the distances to which it will go through the air. The fourth column is added to show the height at which it rises in the air; and the fifth shows the ranges corrected for the diminution of the air's density as the bullet ascends, and may therefore be called the *corrected range*.—[Partington.]

[From the London Mechanics' Magazine.]

LIVERPOOL AND MANCHESTER RAILWAY.—We have great pleasure in laying before our readers a complete copy of the Report made by the Directors of this Railway to their constituents at their last half-yearly meeting (the sixth), on the 22d of January last, when, as stated in our last, a dividend of £4 10s. per share (for the half year) was declared. It furnishes another most complete answer to the calumnies of Mr. Cort and his patrons; showing that, after paying all expenses ("interest" on loans included) during the past half-year, there remained a nett balance of profit of £40,346 6s. 7d. The Directors, it will be observed, have resolved to discontinue the practice which they have hitherto followed, "of publishing minute particulars of the traffic, with detailed subdivisions and classifications of the disbursements." The practice was a good one, and we are sorry that it has been departed from. The hit at the "Navigation Companies," for not furnishing "their quota to the general stock" of statistical information on the subject of inland transports, is very fair; but the more these bodies are to blame in this respect, the more it would have been to the honor of the Liverpool and Manchester Railway Directors to persevere in the patriotic and enlightened course they at first adopted, of laying the fullest possible information on every branch of their proceedings before the public.—[ED. L. M. M.]

Liverpool and Manchester Railway—Sixth Half-Yearly Meeting.

REPORT.

Liverpool, January 21, 1835.

The Directors are happy to inform the Proprietors that the business of the Company in the last half-year appears to have been gradually on the increase compared with that of the corresponding six months in former years. The following is a statement of the receipts in the different departments, and of the disbursements, exhibited under the usual heads for the same period:—

HALF YEAR ENDING 31ST DECEMBER, 1834.

Receipts.

Coaching Department,	£60,292	7	4
Merchandise do.	41,197	18	6
Coal do.	3,408	16	4
	£104,899	2	2

Expenses.

Bad Debt Account,	£292	2	6
Coach Disbursement Account, viz.: guards and porters' wages, £1,205 3s. 3d.; parcel carts, horsekeep and drivers' wages, £365 10s. 2d.; materials for repairing, £1,131 16s. 11d.; men's wages repairing, £1,505 7s. 5d.; gas, oil, tallow, cordage, &c., £155 11s. 3d.; duty on passengers, £3,284 12s.; stationery and petty expenses, £308 19s. 1d.; taxes, insurance, &c., on offices and stations, £171 16s. 1d.,	8,128	16	2
Carrying Disbursement Account, viz.: agents' and clerks' salaries, 1,804l. 12s. 9d.; porters' and brakesmen's wages, 5,028l. 14s. 8d.; gas, oil, tallow, cordage, &c., 208l. 3s. 5d.; repairs to jiggers, trucks, stations, &c., 581l. 4s. 9d.; stationery and petty expenses, £487 15s. 9d.; taxes, insurance, &c. on offices and stations, 451l. 8s. 8d.,	8,562	0	0
Coal Disbursement Account,	220	1	8
Cartage (Liverpool) do.	59	16	8
Do. (Manchester) do.	3,247	2	3
Charge for Direction do.	301	7	0
Compensation (Coaching) do.	43	1	11
Compensation (Carrying) do.	222	19	8
Coach-office Establishment do., viz.: agents' and clerks' salaries, 601l. 15s.; rent and taxes, 74l. 10s.,	676	5	0
Engineering Department Account,	352	10	0
Interest do.	6,725	14	5
Locomotive Power do., viz.:			

coke and carting, 3,654*l.* 7*s.* 5*d.*; wages to coke fillers and watering engines, 349*l.* 15*s.* 10*d.*; gas, oil, tallow, hemp, &c., 932*l.* 8*s.* 10*d.*; copper, brass, iron, timber, &c., for repairs, 3,295*l.* 19*s.* 9*d.*; men's wages repairing, 4,892*l.* 3*s.* 2*d.*; enginemen and firemen's wages, 815*l.* 12*s.* 7*d.*; out-door repairs to engines, 1,320*l.* 3*s.* 1*d.*; three new engines, 2,880*l.* 13*s.*; new boiler and shed at water station, 223*l.* 8*s.* 11*d.*,	18,364	12	7
Law Disbursement Account, . . .	100	0	0
Maintenance of Way do., viz.: wages and small materials, 4,163*l.* 0*s.* 10*d.*; stone blocks, sleepers, &c., 1,082*l.* 10*s.* 4*d.*; new rails, chairs, points, crossings, &c., 2,500*l.* 11*s.* 3*d.*; ballast and leading, 217*l.* 6*s.* 5*d.*, . .	7,963	8	10
Office Establishment Account, viz.: salaries, 767*l.*; rent and taxes, 70*l.* 10*s.*; stationery, &c., 49*l.* 11*s.* 1*d.*	887	1	1
Police Account, ...	1,033	4	4
Petty Disbursement Account, . .	40	0	0
Rent do. . . .	233	15	0
Repairs to Walls and Fences do., .	712	9	9
Stationary Engine Disbursement Account, viz.: coal, 303*l.* 16*s.* 3*d.*; engineman and firemen's wages, 102*l.* 6*s.*; materials and repairing, 63*l.* 9*s.* 9*d.*; gas, oil, tallow, &c , 53*l.* 15*s.* 5*d.*; deepening engine wells, 44*l.* 2*s.* 6*d.*, ...	567	9	11
Tunnel Disbursement Account, viz.: brakesmen's wages, 226*l.* 3*s.*; gas and repairs, 91*l.* 19*s.* 8*d.*; new sheeves, oil, cordage, &c., 90*i.* 14*s.* 4*d.*, ...	408	17	0
Tax and Rate Account, ...	2,729	17	6
Waggon Disbursement do., smiths' and joiners' wages, 1,207*l.* 11*s.* 10*d.*; steel, iron, timber, &c., 1,322*l.* 10*s.* 10*d.*; cordage, grease, paint, oil, &c., 149*l.* 19*s.* 8*d.*, ...	2,680	2	4
	64,552	15	7
Nett profit for six months,	40,346	6	7

Statement of Receipts and Expenditure on Capital Account, from the commencement of the undertaking to 31*st December*, 1834.

Treasurer, *Dr.*	£	*s.*	*d.*
To amount of Joint Capital in Shares and Loans, ...	1,151,185	0	0
Ditto of Dividends not paid, . .	1,426	17	5
Ditto of Reserved Fund and Interest, ...	3,930	13	6
Surplus in hand after payment of the 8th Dividend in August, 1834,	164	11	0
Nett Profits of the Concern for the half year ending 31st December, 1834, ...	40,346	6	7
	£1,197,053	8	6

Treasurer, *Cr.*	£	*s.*	*d.*
By amount of Expenditure on the Construction of the Way and the Works, including the Tunnel Excavations, &c., now in progress, ...	1,156,563	18	3
Ditto in the hands of Moss & Co., Bankers, ...	23,790	14	6
Ditto in the hands of the Treasurer,	117	4	8
Ditto Arrears of Calls, ...	18	8	6
Ditto Balance of Book Debts due to the Company, ...	16,563	2	7
	£1,197,053	8	6

On the subject of the accustomed half-yearly reports, the Directors beg leave to recommend to the proprietors a departure from the plan hitherto pursued, of publishing minute particulars of the traffic, with detailed subdivisions and classifications of the disbursements; and in doing so, they will state briefly some of the reasons which have led them to this recommendation.

The Liverpool and Manchester Railway being the first great undertaking of the kind, the Directors, on the opening of the line, were aware that according to the measure of its success would be the probability of similar enterprises, founded on this first experiment; every step, therefore, in their proceedings, whether with reference to extent of traffic, mechanical improvements, or financial results, was interesting, as well to the public as to the proprietors; and under that conviction the Directors published, half yearly, those minute details of the concern, which have found their way into every portion of the globe. It was obvious, also, that had their example in this respect been followed by the conductors of the great Water Conveyances, so far at least as regards the extent and gradual increase of their aggregate traffic, whether comprising raw materials, moving from the seaport into the interior, or manufactured commodities brought from the country to the port for shipment, valuable statistical information might have been obtained.

During four years the Directors have pursued the plan of unreserved publicity; their difficulties and their mistakes; but notwithstanding these—their success in the great features of their undertaking, have been made familiar to the public. The subject is now understood in all its parts, and so well satisfied are the public and the legislature with the general result, that the construction of railways in great lines from north to south of the kingdom, has become a distinguishing mark of the present age. The object of publicity has thus been gained. It has been determined by the country and the government that railways shall proceed; and the extent to which they will hereafter be carried will depend on the success, not of the Liverpool and Manchester line, but of those great works which are now in progress. The Directors are of opinion, therefore, that the time has come when they may fairly be allowed to consult the interest and convenience of the Railway Company, regarded as a great mercantile concern, whose proceedings may henceforward be considered as matters of business, in which the proprietors alone are concerned. It is obvious that no statistical information can be expected from the publication of their accounts, as none of the Navigation Companies, the great rivals and competitors of the Railway, will furnish their quota to the general stock. Such existing railways also as have up to the present period been completed, have forborne to furnish any detailed statements of account; and the Directors are not aware that the conductors of the great north and south lines, now in course of execution, intend to deviate from the general rule; neither, perhaps, should it be considered matter of surprise, that the managers of other concerns, regarding the conduct of their several undertakings, exclusively *in the way of business*, and with a view to the commercial interests of their respective proprietors, should decline exposing gratuitously the extent and character of their operations, and the exact increase or decrease of their traffic, with its corresponding profit or loss, to the examination of rival or opposing establishments.

On the subject of locomotive power, the Directors have again to observe, that they consider the travelling engines to be in a state of gradual but marked improvement. The superintending mechanics of the Company, by lengthened experience, unremitting attention, and constant examination of the working of the various engines, have endeavored to add some improvement to each machine as it has passed successively through their hands. And the Directors feel no hesitation in stating, that the trips of the locomotive engines, for the last six months, have been performed with a speed and regularity superior to what has been accomplished in any former period. The disbursements in this department for the last six months are heavy, but they include the cost of three new and powerful engines, and the entire re-construction with new materials of a fourth, with the exception only of the cylindrical boiler. Whilst alterations were continually making, and improvements suggested, the Directors were unwilling to have on hand a large stock of imperfect machines: they are now of opinion, however, and they have begun to act on that opinion, that with their present experience it will be advantageous to increase their supply of locomotive engines, and so provide for all needful repairs being effected with less of night work; and with that completeness which is impossible when engines are, of necessity, hurried out of the repairing shops, in order that the ordinary traffic of the line may not be stopped. Engineers and scientific men from different parts of the world are not unfrequent visiters at the Company's workshops, which are at all times accessible for the benefit of the public—whether for the purpose of scientific research, or of practical information.

The excavation of the new tunnel from Wavertree-lane to Lime-street is opened throughout its whole length, and will soon be ready for laying down the blocks and rails.

The Directors, in former reports, have alluded to the course which they had considered it expedient to adopt of substituting heavier and stronger rails in place of those which from time to time had been bent or broken, owing to the service to which they were subjected, from the speed and weight of the engines, being far more severe than was originally contemplated. From experience of the decided superiority of those parts of the way which have already been laid with the stronger rails, the Directors feel the propriety of proceeding to relay with heavier and stronger rails such portions of the line as have from time to time to be *taken up* for the purpose of substituting stone blocks for the original wooden sleepers; and they doubt not, in so doing, they shall obtain the concurrence of the proprietors.

By the foregoing statement of accounts it appears that there is a nett disposable profit for the half-year of	40,346*l.*	6	7
Which added to the surplus from the last half-year	164	11	0
Amounts to	40,510*l.*	17	7

Out of this sum the Directors recommend that a dividend be now made to the proprietors of £4 10s. per £100 share, amounting to £35,859. That £3,000 be appropriated to the relaying of the way with stronger rails; and that the remaining sum of £1,651 17s. 7d. be carried as a generel balance to the next half-year's account.

Charles Lawrence, Chairman.

Steamboat Navigation on Lake Ontario.—The Steamboat Oswego commenced the season of Steamboat navigation on the morning of the 5th. She left our harbor in beautiful style bound for the Genesee river, Toronto, (U. C.) and Niagara. She has taken the lead upon the lake and gives strong proof of her ability to maintain it. The firmness, nautical skill and experience of her commander, Capt. Homans, entitle him to claim from the public the highest degree of confidence. [Oswego Palladium.]

The books of the Sea Insurance Company are to be opened to-morrow, and the two succeeding days at the Union Bank. We understand their charter, in addition to Marine Insurance, gives extensive priviliges for insurance on our inland navigation and transportation routes, which has been much needed, and offers very favorable prospects for investment. M.

NEW-YORK AMERICAN.

APRIL 11—17, 1835.

LITERARY NOTICES.

THE CRAYON MISCELLANY—A TOUR ON THE PRARIES. BY THE AUTHOR OF THE SKETCH BOOK, 1 vol.: Philadelphia, CAREY, LEA & BLANCHARD. We have perused this eagerly anticipated volume with unalloyed delight. We received it only last evening and sat down at first merely to take a taste of it; to turn over a few pages and see how the author had treated his object, and then to reserve the book for quiet and leisurely enjoyment afterward. In this mood we re-read the introduction, (which has already found its way into the papers, and which is decidedly among the most felicitous pieces of Mr. Irving's writings, exquisite in style, and noble in sentiment) we next looked a little further in advance, in order to discover the immediate scenes, the author had before him—and then learning the precise quarter in which he was bound, we could not lay down the book without ascertaining who were to be his companions. We made the acquaintance of each almost before we were aware of it and became interested in the part which each was to take in the wild expedition before him.—We were anxious to see them all well mounted and fairly started on their journey.—We could not help following them to their general rendezvous. They crossed the border—and still we loitered near to witness their first interview with the rangers. They began their march.—The bugle rang out on the soft air of a still Indian summer morning.—The mounted riflemen filed off slowly beneath the boughs of the rich autumnal forest.—The hunters and trappers spurred more eagerly along the flanks, and shot off in the adjacent praries. We watched the gleam of their rifles as their forms were gradually lessened and lost over the rolling plain, and the shouts of *Tonish* echoed back by his half-breed compeers as the last pack horse disappeared in a ravine, came distinctly upon our ears. We looked around over the grassy domain, diversified with its scattered groves and forests and glassy pools, reflecting their painted foliage: we moved a little to catch an other glance of the last straggler that remained to give life to the landscape, and before he had joined the column, we found ourselves galloping by his side, and in full career over the Grand Prarie. Nor could we then tear ourselves from the party until their wayworn and jaded horses, after many a buffaloe hunt and wild foray were stabled once more at Cantonment Gibson, and their riders had dispersed to their distant homes. In a word we never laid down the book until we had read it completely through. He who feels the slightest interest in the kind of life here described, will find no where so captivating, and yet thoroughly faithful a picture of its realities as is presented in Mr. Irving's work. He who has once tasted it, will burn at every page to be once more upon the praries. There is no story in the book—no single tissue of strange adventure—no train of declamatory common places and theatrical sentiment. It is simply a picture of *life*—a picture drawn with the most easy and unaffected hand—but laid in colors, rich, warm and enduring—for the style of the writer like the Claude-like atmosphere of our Indian summer, embalms every object in mellow yet glorious repose.

[A number of beautiful passages meant to accompany this notice, shall appear hereafter.]

ADVICE TO A BROTHER:

MISSIONARY REMAINS. New York: Taylor & Gould, Brick Church Chapel.—These two works of religious instruction, are very handsomely printed 18mos. The first is written by a Missionary, and the second, which commemorates the lives of those of his departed brethren, is a brief, but not inelegant eulogy, by the Rev. Dr. Spring. ‡

THE BOOK OF SCIENCE, Part I—Mechanic: Philadelphia: Cary, Lea & Blanchard.—This little work is a familiar introduction to the principles of natural philosophy, adapted to the comprehension of yound people; and as an elementary treatise, we should thing it would prove valuable. It appears to be prepared with care and simplicity, and it is well illustrated with all the necessary diagrams and figures. ‡

VALERIUS, A ROMAN STORY, 2 vols. Harper's.—We are happy to meet with a republication of this excellent work of Lockhart. The time which has elapsed since its first appearance, has confirmed the favor of its reception, and established Valerius as one of the standard novels of the day. The beauty of the style, the interest of the story, and the affecting scenes it describes, during the early struggles of Christianity, under the Roman emperors, recommend this work to every reader of taste and feeling. ‡

ELEMENTS OF ALGEBRA—TRANSLATED FROM THE FRENCH OF M. BOURDON. REVISED AND ADAPTED TO THE COURSES OF MATHEMATICAL INSTRUCTION IN THE UNITED STATES; BY CHARLES DAVIES, PROFESSOR OF MATHEMATICS IN THE MILITARY ACADEMY. WILEY & LONG; NEW YORK.—This work has been already mentioned in these columns; but as it is likely to exert considerable influence upon the progress of mathematical science in this country, it deserves something more than a passing notice.

In the mathematical and physical sciences, France has for a long time held undisputed preeminence, and is at this moment enjoying in every department of life, the fruits which have rewarded the labors of her men of genius. Laying aside the unwieldy weapons and cumbersome armor of the ancient methods, she has substituted for them the more refined, the less pompous and intimidating to vulgar eyes, but the infinitely more efficient system of the modern analysis.—Whilst this has been perfecting itself, and producing the most brilliant and stupendous effects in France, England has been content to plod on in the good old way, and not until quite recently has her pride allowed her to acknowledge the superiority, and to follow in the steps of her rival. To say however, that France has done every thing for the mathematics and England nothing, would be absurd. The latter pursuing a different path, has also, gathered choice fruits though of a different kind. The great distinction between the two nations, where they have occupied common ground, is, that the one has been too exclusively theoretical, the other too purely practical. The advice of Laplace—"*Give the preference, in teaching to general methods, endeavor to present them in the most simple manner and you will see at the same time, that they are almost always most easy,*"—(Journal des Scences de l'Ecole Normale,) expresses the method which the French mathematical writers have adopted. In observing this however, they have too much neglected illustrative examples, by which the student might acquire practical skill in the application of theory. The English writers on the other hand, abundantly exhibit the modus operandi, but omit the demonstration of the principles upon which it depends; whereby one of the chief benefits of mathematical study, namely, the exercise of the reasoning faculties, is lost.

The above remarks if just, show the importance of that feature in the plan of the work which has called forth this article mentioned in the following paragraph of its preface. "It has been the intention to unite in this work, the scientific discussions of the French, with the practical methods of the English school; that theory and practice, science and art may mutually aid and illustrate each other."

The Algebra of La Croix, a treatise of the highest merit, was the one formerly most used in France. It was translated into English, some years since by Professor Farrar of Harvard College, and has had an extensive circulation in this country.

Bourdon's Algebra, soon after its publication, was adopted by the University of Paris, and has superseded that of La Croix, at most of the Mathematical schools in the kingdom. Its excellence lies, not alone in the matter which it contains, but also in the admirable order, and clearness, with which it is presented. It was translated in part by Professor De Morgan, of the London University, and is in use at the University of Cambridge. A translation was made by Lieut. Ross of the Military Academy, West Point for the use of the Cadets, in the year 1831. In the hands of the present Editor, it has undergone great alterations. An occasional diffuseness rendering it tedious and obscure has been corrected, a few demonstrations have been replaced by better ones, and some unimportant matter has been omitted, and other more valuable, including a great variety of examples, judiciously selected, from the best English practical works, has been introduced. Even the arrangement of the matter upon each page, indicates the hand of one who has observed the importance of not neglecting the most trifling helps which can facilitate the progress of the student.

The work is in all respects, what might be expected from the distinguished gentleman, who has been for many years at the head of the department to which it belongs, in the best Mathematical School in the country.

FIRST LESSONS IN POLITICAL ECONOMY, by *Jno. McVickar, D. D.*, Professor of Political Economy, Columbia College, New York. Boston: Hilliard, Gray & Co.—We cannot better promote the dissemination of this excellent little elementary work, than by giving Professor McVickar's views of his subject, as laid down in his preface. His name alone is a sufficient guarantee how these views will be carried out:

"The first principles of Political Economy are truisms which a child may understand, and which children should therefore be taught. In the last century they were among the speculations of the learned; they have now become the heritage of the nursery; and the only difficulty in teaching them in after life arises from a suspicion excited by their very simplicity. They are so obvious, that men are apt to think, if true, they would not have then, for the first time to learn them. That this stumbling block may be removed from the path of the next generation, we must now incorporate these truths into the studies of children, in order that they may become, as it were, "part and parcel of their minds." From such a course, we have reason to believe, would flow many and great advantages. Men in high and responsible stations would then no longer be found engaged in learning principles when they should be occupied in applying them, nor in discussing theories when they shoud be directing practice; for certainly to see statesmen, as we now do, disputing about the laws of currency when called upon to regulate it, is an absurdity as great as to see engineers upon the field of battle commencing their dispute as to the principles of the law of projectiles. In either case it is a discussion foreign to their business, and originating in a culpable ignorance of what they should before have learned. To question the principles of science is always the part of ignorance. The true difficulty in Political Economy, and it no doubt is a great one, lies in the modification which peculiar circumstances produce upon the results of general laws. This is the true field of practical inquiry—not principles—they are fixed and uniform. In economical as in all other sciences, theories have power to mislead only so long as the principles of science continued unsettled. So soon as men cease to dispute about the ground upon which they set out, then, and not before, do they take up questions in the plain light of fact and experience.

With a view to do his share toward forwarding this good work, which, as academic teacher of the science, he feels himself by duty called upon to do, the Author proposes to prepare a series of text books on these subjects, in a manner suited to the varied ages and capacity of those for whose instruction they are intended, being

1. First Lessons in Political Economy, for primary and common schools.

2. Outlines of Political Economy, for higher schools and academies.

3. Lectures on Political Economy, for the use of elder students in colleges.

Such a scheme as this, though it had been long before his mind, and materials for it partly prepared, might yet, he is well aware, have slumbered on much longer, had not a recent work of Whately, entitled "Easy Lessons on Money Matters," recalled to his mind, together with a conviction of the expediency of no longer delaying what is evidently in our country so greatly needed; for if universal suffrage make every man a legislator, universal education must fit him for the task. To employ his power wisely and well, he must at any rate not be ignorant in those matters in which legislation is concerned.

For Number 1. in the series, a republication of Whately was first thought of, with questions annexed; but this idea was soon abandoned, from the inapplicability of the work to the circumstances and needs of our country. The Author has therefore proceeded to give his own views, and in his own way, in reference to the wants of his fellow citizens; retaining, however, the first lesson, or that on "Money," as given by Whately, in order that an humble imitator of his method may not seem to claim a merit of originality to which he is not entitled.

FOREIGN INTELLIGENCE.

LATEST FROM ENGLAND.—By the packet ship Europe, Captain Marshall, arrived last evening, we have London papers of the 17th, and Liverpool of the 18th, inclusive. They contain little of interest except that the ministry continued, and apparently, firm in their seats. The only items of interest will be found under head of Foreign News. The Cotton market is improving.

SPAIN.

We have received by express Madrid papers of the 7th inst. and private letters from that capital of the 8th. The health of Martinez de la Rosa is spoken of as becoming daily more feeble, but the new Minister at War (General Valdez) was displaying the utmost energy and activity in despatching reinforcements to General Mina. The 5th Regiment of the Line had left Madrid for the north on the 7th, and on the next day was followed by the provincial regiments of Ronda and Seville. These three regiments were to be joined at Fuencarral, a village a few leagues to the north of Madrid, by the Albuera and Valencia volunteers, and with them were to be formed into a separate division, to be placed under the command of General Cordova, who was to replace General Carratala, the latter having been appointed Captain General of Murcia and Valencia. It was expected that early in the spring the numerical force under Mina would be raised to 60,000 men.

PORTUGAL.

The private letters from Lisbon, by the mail of yesterday morning, add little to our news from thence, but the annexed extract from one of them is interesting, as showing what an alteration for the better has been produced in that capital by the recent changes in the Government:

"LISBON, MARCH 4.—For those who saw Lisbon three months ago, and who see it at the present day, our city has completely changed its aspect.—No one is any longer insulted in the streets on account of his former political opinions. It seems as if the Pedroites had at length come to an agreement, not perhaps completely to forget the past, but to adopt the appearance of recollecting it as little as possible. Our carnival has been more brilliant than for many years before, and it was a great pleasure to see both men and women cordially meeting in the same drawing room, one half of whom had much to pardon to the other half.—Our Government has returned, without any kind of confusion, to the Constitutional line, from which it ought never to have diverged. There are no longer in the Council any but responsible Ministers. The Duke of Palmello, who was President, holding a portfolio, is now Minister of Foreign Affairs. The Prince applies himself to public affairs as much as he can and ought, and it is remarked with esteem for his character, that two of the Ministers, who both spoke and even voted against his marriage with the Queen, not only remain in the administration, but are treated by him with as much kindness as the rest. The Prince is very active. He visits all our public establishments in turn, and examines them with care, so as to be able to assist hereafter in remedying what is defective in them. The opposition in the Chambers has certainly not renounced its principles, and ought not to do so, but relying on the Prince's declaration in his speech to the Peers, it becomes every day more calm and moderate. The Minister of the Interior is gaining popularity in his new office. A little time hence, and I trust not the slightest trace will remain of our divisions and misfortunes. The Queen and her husband are accessible to all, indulge in no luxury or ostentation, and live together in a harmony which promises both them and us many happy days."

The supplement to the Literary Advertiser for 1834 contains lists of the new books and principal engravings published in London during the past year, with their sizes and prices. The number of books is abaut 1,270, exclusive of new editions, pamphlets or periodicals, being upwards of 100 more than in 1833. The number of engravings is 73 (including 31 portraits, 15 of which are engraved in the line manner, 49 in mezzotinta, &c.

The London Morning Chronicle, of the 9th ultimo, says—"The poets Thomas Moore, William Wordsworth, and Robert Southey, are all at present in London, and each of them preparing to publish a new work."

A recent London Gazette contains the appointment of Sir Howard Douglas (*not* Sir Robert Wilson) to be Lord High Commissioner of the Ionian Islands.

The new scheme of church reform in England, will fix the income of the Archbishop of Canterbury at 10,000*l.*, and that of the Archbishop of York at 8,000*l.*, while the salaries of the other bishops are to be equalized at 5,000*l.* a year. Of course these arrangements must be prospective. A plan distinguished for its ingenuity, has been submitted to the commissioners with a view of procuring the immediate abolition of pluralities. We are not at liberty to state the details. —[London Courier.]

LONDON AND PARISIAN FASHIONS.—*Beginning of March.*—Ball dresses are generally ornamented with bouquets of flowers, placed one side of the *jupon*, and extending from the waist to the feet. Wreaths are sometimes used instead of detached bouquets. A dress lately made by a distinguished Parisian milliner was composed of white crape, and ornamented up one side with five bouquets of flowers of different hues: one bouquet was of pink roses, another of blue hyacinths, and a third of clematis, &c. In short, a whole parterre seemed to have been laid under contribution for the adornment of this beautiful dress. The *coiffure* worn with it was a repetition of the trimming of the robe, and consisted of a crown formed of all the flowers introduced in the bouquets.

Another much admired ball dress was of pink gauze over a slip of pink *poult-de soi*. Three bouquets of white flowers were placed at the height of the knee, and fastened three pink satin ribbons which ascended diagonally to the waist, and were gathered under the bow of the ceinture on one side. On each shoulder a bunch of white flowers, widening on the sleeve, and confining its folds. Head-dress, two white flowers on each temple, fastened into paintings of hair *à la Clotilde*. In the centre of the forehead a cameo, suspended by a fine gold chain.

Turbans of the form styled *à la Juive* are much worn, and are extremely becoming to an oval and reguler countenance. The *bandelette* which passes under the chin has a very pretty effect.

With dresses of velvet or rich silk and satin, mantillas of *dentelle de soi* are more generally adapted than those of blonde or *point d' Angleterre*.

The following dresses have been worn at some of the most fashionable parties of the season.

1. An open robe of pink *tulle*, fastened back on either side by bunches of pink hyacintha. The robe worn over a pink satin petticoat.

2. A robe of citron-colored *tulle*, tastefully trimed with ribbons and bequets of daisies.

3. Robe of sea-green *tulle*, open in front; a satin petticoat of the same color. This dress was worn with a beautiful *parure* of pearls.

4. A robe of lilac crape, trimed with bunches of white lilac.

A new kind of satin has been introduced for promenade dress. It is very thick and richly figured, in prtterns similar to those of the printed muslins. Green and puce are favorite colors; the pattern being a shade darker than that of the ground.

In carriage costume we have observed many bonnets of straw or citron-colored satin, ornamented with flowers or feathers of the same hue.

Velvet is the favorite material for promenade hats and bonnets. Blue, black and green are the colors most generally worn. A single feather placed on one side is the favorite ornament.

Aprons are now made of printed satin; the middle plain and of some light color, and edged round with a rich border, which is repeated on the pockets and the *ceinture*.

SUMMARY.

The President of the United States has recognized George Henrich Seimon as Consul of Bavaria for the port of New York; D. Manuel Valdor as Vice Consul of Portugal, for the port of Baltimore, and the State of Maryland; and Joao Vaughan has been appointed Vice Consul of Portugal, for the Port of Philadelphia, the other Ports of Pennsylvania, and the West Jersey.—[Nat. Intel.]

EASY CHAIR.—Mr. B. F. Hays of Massachusetts, has left at this office for inspection an easy chair, designed for the convenience of invalids. It is so constructed as to be used as a chair on rollers, or on rockers, and also as a cradle — or bed — and may be changed from one to the other, with great ease by the person using it, without rising.

It is a very ingenious, convenient and cheap article—and may be examined by all who desire to see it. M.

EXPEDITION.—The steamboat President, Capt. E. S. Bunker, arrived this morning in 14 hours and 9 minutes from Providence, being the shortest passage known considering the state of the tides.

From schools of the character of the one noticed in the following extract from the Albany Daily Advertiser, much good must certainly result. They will enable many a young man of talents to "work his passage" to eminence, who would, but for them, never dream—any more than did the honest planters of North Carolina—of the value of the mines beneath the surface of their native soil.

They should be cherished by every true lover of his country. M.

Manual Labor School.—We are happy to learn from the Columbia Republican that an institution, upon the plan of the Alabama school, will go into operation in Columbia County, in the early part of next month, with a good prospect of complete success. Ample funds; we believe, have been provided, so as to place the institution beyond the risk of embarrassment, the patronage and favor of a large number of gentlemen of influence, and religious societies has been secured, and the institution is placed under the directions of Rev. D. M. Smith, as Principal, a gentleman eminently qualified, by experience and education, to direct the *machinery* of so important a "department of benevolent operation."

A farm of 200 acres pleasant situation on the bank of the River, few miles above this city, has been purchased, and suitable buildings will be in readiness at the commencement of the 2d term; in the mean while, the farm hous, sufficiently large to accommodate more than 50 scholars, will be occupied. The new buildings are to contain 64 rooms for students, a school room of large dimentions, and habitations for the teachers.

It is estimated that the expense for board and tuition at this school will not exceed $75 per year, an amount which an industrious young man, by his labor for necessary recreation, say 3 hours per day, either at mechanical or agricultural labor, can earn.

Uncurrent Money.—The subject of adopting measures to require the Safety Fund Banks of the State to keep their bills at par in the city of New York, has been brought before the Legislature, and we cannot but think that a measure so evidently beneficial to the people will eventually be adopted. It is a notorious fact that the inconvenience and loss from uncurrent money are to business men very great; and as banks receive from the State Legislative sanction to issue notes as the representation of money, it is perfectly right and proper, and but even handed justice, that these notes be worth the face of them within the limits of the State, and that measures be adopted to require the banks issuing them to make them so.—[Troy Daily Whig.]

Much more benefit would result from the adoption of this measure, than from the prohibition of small notes.

Yesterday, at the Town Meeting, a communication from James Wadsworth, Esq. was read, stating that his late brother, Gen. Wm. Wadsworth, left by will, the sum of *one thousand dollars*, to be loaned on real estate, the interest of which sum is to be expended in educating the children of indigent parents in the town of Geneseo. The Trustees of the several School Districts were informed that a quantity of School Books were left at the Clerk,s Office, to be by them distributed as they should think proper.—[Livingston Register.]

[*From the Jonesborough (Ten.) Republican and Jour.*]

Dreadful Tornado.—One of the most violent hurricanes ever witnessed in this State was experienced in the lower part of Murray county on the night of the 21st ult. Eight persons were killed and fifteen or twenty others, severely injured some of whom were not expected to recover, much damage has been done. Houses, fences, trees, and indeed every thing which opposed the progress of the winds has been swept away. Some idea may be formed of the force of the gale from the circumstance that a piece of poplar plank perfectly square and blunt at the end was found driven by the force of the wind, into the body of a lynn tree at an angle of about forty five degrees to the depth of 3 1-4 inches. It is said that the tornado visited the neighborhood of Clarksville on the same night with equal violence and accounts have been received of two deaths and two persons mortally wounded as is supposed. The foregoing particulars are taken from Columbia Observer, and we are apprehensive that the next accounts from the scenes of devastation will be of a most deplorable character.

Accounts from Florence Alabama represent that much injury was also sustained in the vicinity of that place though no lives lost.

Ice was made on Tuesday night in this city, and the surface of the ground frozen. Fortunately the fruit trees are not sufficiently forward to be injured by the frost, except possibly apricots, which are just beginning to blossom.—[Journ. of Commerce.]

The China and Fig trees in Georgia and South Carolina, have been generally killed by the severe weather of the past winter.

Among the passengers in the ship Francis Depau, for Havre, which sailed on Saturday, was Professor Farnum, of Washington College, Virginia. Professor Farnum, we understand, is expected to purchase philosophical apparatus for that institution.

Arrival of Dr. Jarvis.—We are happy to announce that the Rev. Samuel F. Jarvis, D. D., has returned from his protracted residence abroad, and is at present in this city. The long absence of Dr. Jarvis has been for years a standing topic of regret. We are not apprized of his intentions, but we will not doubt that he purposes henceforward to pursue his labors for the Church in his native land, and in the midst of those friends who know and appreciate his distinguished learning and sterling worth.—[Churchman.]

Bible for the Blind.—At a meeting of the Blind School, Liverpool, on Friday week, Mr. William Brown presented to the institution a very handsome bound copy of a part of the gospel of St. Mark, printed in embossed letters, so as to be read by blind persons by the touch. It had been transmitted from the Blind Institution of Pennsylvania, by Mr. Richards, late Mayor of Philadelphia.—[Liverpool Advertiser.]

From the Buffalo Daily Advertiser we learn that a fine schooner, called the *Agnes Barton*, was launched from Carrick & Bidwell's Ship Yard, in that city, on Saturday. She is of a 110 tons burden, and owned by James L. Barton, Esq. This looks business like, and we hope to have frequent opportunities to record similar occurrences.

Later from England.—The ship Ontario, Capt. Sebor, arrived at this port last evening from London. She brings London papers to Saturday evening, March 21st, and Portsmouth to the 23d.

We are indebted to the morning papers for the latest dates.

The Portsmouth Telegraph of the 23d contains the following:—

"*Sunday Morning, March* 22.

The Bristol mail brings us intelligence that an American packet had arrived at Cork, with the news that *America has declared War against France.*"

The London Gazette announces that Lord Cowley has been appointed British Ambassador Extraordinary and Plenipotentiary at the Court of France.

It was reported that Sir Robert Cordon had been appointed ambassador to Russia.

Viscount Canterbury, his Majesty's Commissioner to Canada, to settle the disputes that have arisen there, was expected to embark for that colony about the 30th of April in a ship of war.

The Report of the Commissioners appointed to inquire into the state of the Established Church, was laid on the table of each House of Parliament on the 18th. It proposes a new arrangement of Dioceses, and adjustment of the incomes of the Bishops as nearly as may be, to their several stations and duties.

Sir Edward Sugden has suddenly and unexpectedly relinquished the Chancellorship of Ireland. Sir Charles Wetherell is among those spoken of as his successor.

An Action took place in Spain, March 12th, between Mina and Zumalacarreguy, in which the Carlists were defeated at all points. The latter, however, had retreated to a commanding position between Pampeluna and St Sebastian.

The advices from Lisbon were to March 10th, at which time every thing was quiet.

A great fire occurred in the Chinese district of Macao on the 5th of November. It broke out in some boats moored near the river, which were destroyed, together with about *four hundred* well built houses.

The New York and Erie Railroad.—For the information of persons disposed to subscribe on Wednesday, 15th, to the stock of this Company, we publish the following concise statement, from an authentic source, of the particulars of this great enterprise, destined, as we firmly believe, to become not less profitable than honourable to those of our citizens who may now concentrate their efforts and energies to carry the work vigorously forward.

[*For the New York American.*]

The attention of the public is earnestly invited to the following propositions:—

1. The construction of the New York and Erie Railroad will be practicable at a moderate expense.

2. It will become profitable to the stockholders as soon as 115 miles of single track shall be completed.

3. Every part of the road may be advantageously used for the transportation of persons and property.

4. The road, when completed, will open new and extensive channels of commerce to the city of New York, and will greatly add to its population and wealth.

I. The road is practicable.

It is 483 miles in length, and for more than 400 miles pursues the courses of streams. Railroads which go *with* the vallies of streams are cheap—those which cross them *transversely* are dear. The Mohawk and Hudson road, which does not follow the streams, cost more than $40,000 per mile. The Utica and Schenectady road, which follows the valley of the Mohawk, has been actually put under contract at less than 12,000 dollars per mile. That part of the Baltimore and Ohio road, between Baltimore and Ellicott's Mills, which crosses the vallies transversely, has cost upwards of 40,000 dollars per mile; and that part west of Ellicott's, which follows the valley of the Patapsco, has cost less than 15,000 dollars per mile.

The graduation of the Utica and Schenectady road, ready for the superstructure, is $5728 per mile. That of the New York and Erie road, $5626.

The cost of a single track of *superstructure* will vary according to the plan and materials, more or less imperishable, which may be selected. It will not be less than $3000 nor more than $5,500 per mile. That of the Camden and Amboy road between Bordentown and Camden was about $4,700, that of the Utica and Schenectady, is $4,950 per mile.

Assuming the most durable plan, the superstructure of the single track of the New York and Erie road will not exceed per mile, $5.500

And the graduation	5,626
	11,126
The land required for the road bed, will, throughout at least nine tenths of the line, be gratuitously ceded to the Company.	
Add for engineering and contingencies (per mile,)	1,374
	12,500
Or for the whole 483 miles,	$5,637,500

II. The road will be *profitable* to the stockholders, and that too, as soon as one section of 115 miles shall be completed,—after which its profits will rapidly increase, as that section shall be extended. From a point on the Delaware and Hudson canal, about 45 miles from tide water, the road can be completed to the great and fertile valley of the Susquehanna, (entering it at Bettsburgh,) a distance of 115 miles, for less than $1,500,000. The population in the southern counties distant more than 70 miles west from the Hudson River, and whose products and supplies must be transported on the road, amounted to 338,846, by the census of 1830,—and had increased in the previous ten years at the rate of 55 per cent. [That of the whole of the canal counties, equally distant from the Hudson, and extending north to the northern boundaries of Jefferson County, was only 644,688, and had increased in ten years only 42 per cent.] Of this population of 338,846, at least 150,000 will commence using the road as soon as it reaches Bettsburgh.

From Bettsburgh the road can be extended west to Owego, 55 miles, at an expense of less than 700,000 dollars, and will there become connected through the Owego and Ithaca road, (now completed,) with the populous and fertile counties around and west of the Cayuga and Seneca Lakes.

It is found that the transportation on the Baltimore road has very rapidly increased since the line has been extended westward.

III. There are no grades of ascent on the road which will prevent its advantageous use for the transportation of persons or property.—Its grades are far less severe than those on the Baltimore road. Between Baltimore and Frederick there are the following rates of ascent:—One of 76 feet; one of 87; one of 176; and one of 253 feet to the mile; and yet the road is constantly used for the transportation of flour, live stock, provisions, granite, &c. many of which articles are actually taken out of the boats on the Chesapeake & Ohio Canal, at Harpers' Ferry, and carried in cars over the Railroad to Baltimore!

The severest grade on the New York & Erie Railroad (excepting the one inclined plane near Lake Erie) is only 100 feet to the mile—*less than one half as steep* as the branch of the Mohawk Railroad leading from the car-house at Albany up the street south of the Capitol. Locomotive engines on an improved plan have ascended with trains of passengers up [illegible] stately of 176 feet to the mile on the Balti[illegible] the grade

Auxiliary engines, or an additi[illegible]ional road, [illegible]n of animal pow-

er, can be cheaply employed, if found necessary, on the one ascent of 100 feet to the mile on the Erie road, and will not produce as much delay or expense as is experienced on the two inclined planes between Albany and Schenectady—or on the two inclined planes between Philadelphia and Columbia—or on the *ten* inclined planes on the Pennsylvania road over the Alleghany mountain, now covered with the merchandise of Philadelphia, moving to the far West.

On the New-York and Erie Railroad, besides this one ascent of 100 feet to the mile, there are two others of 70 feet,—one of 65 feet, and one of 61 feet—occurring at only *five points* on the whole line. The whole delay occasioned, either to passengers or the public mails at these five points, will not exceed two hours in the passage from New York to Lake Erie.

The rate of speed on more than nine-tenths of the road will be at least fifteen miles to the hour. Of the 483 miles, the grades of ascent on 329 miles are less than 20 feet to the mile: 416 miles are less than 40 ft: and only 23 miles exceed 60 feet to the mile.

On the Philadelphia and Columbia road there is one grade of 45 feet to the mile (beside the two inclined planes) laid down too over a quicksand constantly passed with locomotive engines. One of the grades on the Camden and Amboy road is more than 45 feet to the mile—and a part of the Liverpool and Manchester road exceeds that rate.

The country traversed by the road is salubrious, fertile and rapidly increasing in wealth. The valley of the Susquehanna occupied by the road, is upwards of 150 miles broad from east to west—and lies generally at an elevation of less than 1000 feet above tide water,—and less than 400 feet above the average level of the county of Ontario. The Pennsylvania Railroad over the Alleghany mountains, is upwards of 2300 feet above tide.

There are three great branches which wil connect the main line with the canal counties—one from Bettsburgh to Utica, about 73 miles; one from Owego 29 miles to Ithaca and Cayuga Lake; and one from Dansville to Rochester, about 60 miles—whereby more than one half of the canal counties will be accommodated during the winter by railroads leading directly to this city.

The road being thus shown to be feasible at a moderate cost, and capable of advantageous use at all seasons of the year, it is claimed that,

IV. It will yield immense advantages, not only to the public, but also to the stockholders who may construct it.

The public will be benefitted by its business; the stockholders by its revenue. The amount of its revenue will depend on the amount of its business. Its business will be created by the necessities of the population, who may use it, to transport their products and supplies to and from tide water.

The geographical districts, which it will accommodate, by furnishing to them a channel of transportation more cheap, regular, and desirable, than by any other avenue of trade or transport, consist of,

1. The southern or "*railroad counties*" of this State, including so much of the adjacent counties, as lies within 40 miles of the line of the route:—

2. The northern and central portion of Pennsylvania, adjacent to the Susquehanna, and capable of being reached by means of that stream, earlier than by the canals of that State:—

3. The southern, or Ohio division of the far West, watered by the Ohio river and its upper branch the Allegany:—

4. The northern or lake division of the far West, lying around the upper Lakes.

The mere statement of these enormous masses of territory, which are thus to be rendered commercially tributary to the city of New-York, suffices of itself to demonstrate the magnitude, importance, and value of the proposed enterprise.—The whole state of New-York, west of a line 70 miles distant from the Hudson river, embracing an area of less than 24,000 square miles, contained, by the last census, only 983,534 inhabitants, and yet it paid in tolls to the Erie Canal during the last year upwards of a million of dollars.—[The whole amount of tolls paid for merchandize going to, and coming from the States west of N. York, was less than 150,000 dollars.] What then will adequately measure the amount of revenue to be derived from the Erie railroad, which independently of its superior facilities for carrying passengers and the mail—of its unrivalled advantage of being available during the five months of the year in which the Erie Canal is closed,—will furnish the means of transport for

1. The Railroad counties, now containing 388,846 of the population of 983,534, thus paying the million of tolls to the State:—

2. The upper part of the Susquehanna valley and northern counties of Pennsylvania now numbering more than 100,000 inhabitants, and are rapidly increasing:—

3 The whole of the Ohio and Allegany valleys embracing an area of 196,000 square miles, and already containing more than two millions of inhabitants:—

4. The vast and populous communities growing up around the great Western Lakes.

The immense commercial importance of the direct connexion to be effected by means of the proposed road and the Allegany river, between the city of New-York and the Valley of the Mississippi, is but yet imperfectly realized or understood. Let it then be distinctly known to our merchants, that the moment the line of the Erie Railroad reaches the Allegany river their merchandize can be delivered on its banks from their warehouses in this city, *within thirty-six hours!* that it can thence descend down the safe, though rapid, current of that stream, *in less than two days* to the wharves at Pittsburg—that this navigation is always available precisely at the period when it is most needed, to wit, in the months of March and April, and that the river with small expense, can be rendered navigable throughout the whole summer and autumn. The enormous importance then of accomplishing this connexion, with the utmost practicable despatch, must then be evident. It is the only mode in which New York can neutralize the gigantic efforts making by Philadelphia to deprive her of the commerce of the west—but when completed, will most effectually accomplish that object. Pittsburgh will thence forward cease to be the western emporium of Pennsylvania, and with her long line of sister cities and communities along the valley of the Ohio, will become attached, as a commercial dependency, to this metropolis.

V. It can hardly be necessary to add, that the construction of this road, producing such mighty commercial results, and pouring into this mart of the Western world such gigantic streams of commercial wealth, must augment the population and riches of this metropolis to an almost incalculable extent. Since the Erie Canal was commenced, our population has increased from 120 to nearly 300 thousand;—our real estate from 50 to 123 millions;—our paved streets then terminating at Grand street, now reach more than half the distance to Harlem Bridge.

Can we then set any reasonable limits to the wealth, extent and grandeur of our city, when it shall *quadruple* its present commerce?—when its merchants shall sell merchandise worth 500 instead of 120 millions annually?—when the island of New York shall be covered throughout its whole surface, with warehouses and dwellings, and temples of religion, of science and the arts? when the mighty chain of railroads already commenced and rapidly spreading over the vast vallies of the West, and all converging towards Lake Erie, shall bring the whole countless population of those grand communities, within three days travel of the Atlantic sea board?

A New Yorker.

Trade with the West.—In as much as the Editor of the Albany *Argus* thinks that the "Philadelphians cannot be to grateful" to this paper for its "remarkable exhibition of liberality in shewing the advantages Pennsylvania possesses over New York, in early navigation," by "actually quoting from interior newspapers," a statement of facts, it may not be improper for us to continue occasionally, such statements as will enable our own citizens to know and appreciate the loss sustained by them—not only in this city, which looses the sale of large amount of goods, but also in the country through which they would, under other circumstances be transported—by the actual and undeniable possession by Pennsylvania of those superior advantages for early transportation; and to the *continuance* of which superiority, in the hands of Pennsylvania, the *Albany Argus*, and its coadjutors with the *honorable* member from Utica, who, it is said, had so much compassion on the capitalists of this, city as to visit many of them personally, to guard them against the danger of loss by subscribing to the stock of the New York and Erie Railroad—have contributed so much, that it is now, *only* to be wrested from her by the *united* and *determined* efforts of the merchants and capitalists of this city—who must, and will, we are confident come forward and show the opponents of this measure, who are so from interested motives, that cupidity and selfishness cannot defeat it.

The following extract, from the Pittsburgh Gazette, shows in bold relief the importance and necessity of prompt and decided measures; and who so much, as the citizens of New York, are interested? Who to be so much benefitted?—Will they rest easy and see the trade, which they have been accustomed to enjoy diverted to another city, simply because her forwarding houses will not forward goods purchassed here, until those purchased there, are *first* all forwarded?—Or will they come forward and aid in constructing a work which will place them at least, upon equal terms? And by which the goods sold by them may be forwarded, when ready, without being subject to the veto power of *any other city*?—We shall see:

Collector's Office,
Allegheny, W. D. Pa. Canal, April 4, 1835.

Amount received in the week ending April 3, 1835, 694 59

51 boats cleared at this office, having tonnage, 1,058,873 lbs.
Tonnage received from the East, 1,264,232 lbs.

Total tonnage of the week ending April 3, 1835, 2,323,105 lbs.

On what day of April will the Collector of Buffalo be able to make a similar statement?

Not that the people of Buffalo, or on the line of the canal have any object or interest in this delay. It is caused by *natural* obstacles; and, therefore, tother means should be adopted; on the most approved mode, and the shortest and best route: and it is surprising that intelligent business men, who are liberal on other subjects, should be so short-sighted in relation to a work of this magnitude, after the experience which they have had of the inestimable benefits of such works.

Railroad from Portland to Quebec.—We observe by the Maine papers that Gov Dunlap has received from Lord Almyer, the Governor-General of British America, at Quebec, a letter, stating his readiness to co-operate with the authorities of Maine in the survey of the propose route of a railroad from the Atlantic seaboard of Maine to Quebec. The Quebec people are stated to feel considerable interest in the measure, as it is natural to expect they would, for they are to look to this route as the most convenient and speedy outlet and inlet during a portion of the year.

The report of the Maine Legislature, upon the subject, made at its late session, had received the attention and met the approbation of the Quebec and Montreal people; and Lord Almyer, in compliance with public opinion, was ready to furnish a corps of Engineers, at the expense of the Government, to assist in procuring an accurate survey of the route and an estimate of the expense.—[Bost. Cour.]

MISCELLANY.

Our Revolutionary Navy.—There is another branch of our annals which has been strangely neglected, and which is neither deficient in interest nor in material. We allude to our naval history. Every body has heard of Paul Jones and of Truxton; and every body knows by heart the achievements of Hull, Perry, Porter, M'Donough, and Bainbridge; but the early and desperate conflicts of our revolutionary navy are, for the most part, forgotten, and by many were never heard of. Mr. Clarke, in his Naval History, and Goldsborough, in his Naval Chronicle, have alluded to these occurrences; but they have done so quite too summarily, though their works are valuable and accurate in recording the history of a later period. The gallant and bloody boat fights of Brewster, Hubbel, and Hawley, along the shores of Long Island Sound, where they encountered the Tories and British, are no where recorded, except in the memories of those who remain, and who participated in them. Among the feats recorded by Goldsborough, is that of a party of less than forty men, at Machias in Maine, who, when they heard of the commencement of hostilities at Lexington, took possession of a lumber sloop, and, armed with thirteen pitchforks, a few sabres, ten or twelve axes, and some pieces of salt pork, sailed in pursuit of a British armed schooner, (carrying four six-pounders, twenty swivels, two wall-pieces, with the proportionate armament of cutlasses, firearms, &c.) laid her alongside and, after a short and desperate engagement, carried her by boarding. With the guns and ammunition procured by this capture, they armed other vessels, and took many prizes. Several little fleets were fitted out from Boston and its vicinity, and cruised with success, and repeatedly succeeded against very superior forces. The achievements of Hopkins, Mugford, Biddle, Williams, Waters, and Whipple, are unsurpassed for their cool intrepidity and good judgment. Mr. Clarke relates the following instance, which exhibits very forcibly the daring character, and adroit manœuvres, of our naval warriors of that day:

"In June 1779, an expedition of United States vessels was fitted out and sailed from Boston.—It consisted of the Providence, thirty-two guns, Commodore Whippie; the Queen of France, twenty-eight guns, Captain J P. Rathburne, and the sloop of war Ranger, Captain Simpson. About the middle of July, near the banks of Newfoundland, as the squadron lay in a fog, signal guns were heard, and at intervals the sound of ships' bells striking the hours. From this they supposed themselves to be near a fleet. About eleven o'clock the fog began to clear off, when the crew of the Queen of France, to their great surprise, found themselves nearly alongside a large merchant ship, and soon after they perceived themselves to be in a fleet of one hundred and fifty sail, under the convoy of a seventy-four, and several frigates and sloops of war. The Queen of France immediately bore down to the large ship and hailed her. She answered that the fleet was from Jamaica, bound to London. The English ship then hailed the American, and was answered, his majesty's ship Arethusa, from Halifax, on a cruise. The American then inquired if they had seen any rebel privateers. The English replied that several had been driven out of the fleet. The American, Captain Rathburne, then requested the captain of the English vessel to come on board, which he did; when, to his great astonishment, he found himself a prisoner. Captain Rathburne then sent one of his own boats, and the English captain's boat, both well manned, to the ship, of which they took quiet possession, without exciting the least alarm in the fleet, notwithstanding many of the vessels were nearly within hail of the one captured. Rathburne then went alongside another large ship, and captured her in the same manner. Soon after the capture of the second ship, Commodore Whipple came alongside, and ordered Captain Rathburne to edge away out of the fleet as soon as possible, as he was persuaded they would be discovered and overpowered. Captain Rathburne then pointed out the two large ships he had captured, and requested permission to remain. The Commodore at first disapproved of this project; but was at length prevailed upon by Captain Rathburne to stay in the fleet all day, and capture as many vessels as they could, in the same cautious manner. As soon as it was dark they left the fleet, after having captured eleven vessels, without giving alarm. The squadron arrived safe at Boston with eight of their prizes—three of them having been retaken by the English."

No men are more enthusiastic in attachment to their profession than the officers of our navy, and to none could the honorable task of recording its history and achievements be more properly confided. It is a work requiring careful accuracy and patient research, and we should have no difficulty in naming more than one of our naval friends who would add to these requisites, finished scholarship, and not unpractised pens.—[American Monthly.]

The Wits of Queen Anne's Reign.—The band of wits, who have rendered so illustrious the reign of Anne—Addison, Steele, Gay, Prior, Swift, Arbuthnot, Bolingbroke, Pope, and their associates, had, in 1735, been wasted and thinned by Time, whose step is alike unerring, and whose scythe is equally unsparing in every age. Gay died when his celebrated comedy began to renumerate him for his previous misfortunes.—Steele—the careless, yet magnanimous Sir Richard—was no more. Atterbury—"the mitred Rochester"—had expired in unmerited exile.—The gentle spirit of Addison, who had taught his cotemporaries how to live, had also (in the beautiful language of his eulogist) "taught them how to die." Arbuthnot—the witty, the humorous, the learned and generous Arbuthnot—was sinking under the disease, that rendered "Euthanasia," as he said, the only wish his friends should prefer for him. Bolingbroke had passed through the extremes of his eventful life. Parliamentary influence—oratorical fame—official power—the imminent scaffold and compulsory exile were over, leaving him thenceforth to affect philosophy, and nourish personal and political malignity, and assail religion. The stern intellect of Swift, preserved as yet, its masculine force; but savage misanthropy had become its absorbing sentiment, and prevenient shadows announced the approach of the dark disease, which ultimately rendered this scorner of mankind, himself "a driveller and a show."

Pope, however, remained in the meridian of his life—in the blaze of his fame—in the full exercise of his power. Having impaled the whole host of the dunces, with the shafts of his satire, he was now moralizing his song, and giving to the world his Essay on Man.

The lapse of a century, constitutes us, perhaps, the posterity to whose judgment these writers so often appealed; and if the respective present popularity of these authors, be the true test of their merits, their relative station has been indeed much altered by time. Steele has dropped entirely out of public view. Prior has grown obscure in the distance. Since the taste of our day has endured the revival of highwaymen's exploits, and tolerated the brutal slang of the bridewell, and the bagnio, there seems no reason why the Beggar's Opera of Gay, should have gone into comparative obscurity, while Paul Clifford, and Rockwood, without a tithe of its wit, or an atom of its verisimilitude, find numerous admirers.—Captain Macheath has no mawkish sentiment, nor improbable refinement, nor impossible manners; and his careless profligacy, and sparkling wit, with "his pistol that never misses fire, and his mare that never slips a shoulder," might render him a classical rogue. We fear our favorite Arbuthnot is not read as he ought to be. His "History of John Bull" has been imitated and travestied so often, that we forget the happy conception of the allegory, and the merit of its execution; and Martinus Scriblerus has not so many disciples as he ought to have.

There is a beautiful halo around the name of Addison. We think of him as a being of gentle manners, and attractive morality, and graceful piety; but his reputation for genius is not what it was, a hundred years ago. His Cato is preserved from utter oblivion, only by our schoolboys, who declaim the stoic's dying speech.—Two little hymns are all that is popular of his poetry. The infinite expansion of periodical literature, in the last twenty years has thrown the *Spectators* into the shade. But *Sir Roger de Coverly* will be immortal. The representative of a class of men, who have passed away, and of a mode of life which will never exist again; the delineation of refined simplicity—of gentle chivalry—of amiable, and not unnatural eccentricity—he will be admired, when the portraits of Kneller shall have mouldered, and for ever preserve the name of his delineator from oblivion.

On the remaining triumvirate of hardier nature, and loftier genius,—Pope, Bolingbroke, and Swift—the effect of time has also been unequal. He, to whom the others deferred—the titled author—has fared the worst. His political writings have sunk into annihilation. On reading his "Patriot King," and "Thoughts on Exile," we ask with wonder, what could so acute a critic as Chesterfield find in their vapid and pointless verbiage, to recommend as models to his son? More subtle skeptics, and bolder infidels, have crowded his philosophical writings into the obscurity of the most cob-webbed shelves of our libraries.—And when another century shall have revolved, the "all-accomplished St. John" will perhaps only be known by the verse in which Pope affected to ask for himself, no other future recognition than as the dependant upon his "Guide, Philosopher, and Friend." But why has Swift, whose burning sarcasm, and poignant wit, and piercing argument, and vigorous style, have no superior in the whole circle of English literature, also subsided from his eminence of fame? His "Tale of a Tub," is not read. His "Conduct of the Allies," which upheld a ministry, is forgotten. His "Drapier's Letters," which made him the O'Connell of the day, are buried in obscurity. "Where be your gibes now? your gambols? your songs? your flashes of merriment?"—The answer perhaps is, that human feeling has avenged the outrages upon itself; and he, who could find in his fellows, nothing to love or admire, is for that reason, with all his genius, deprived of the love and admiration of his kind. It is by the writings of Alexander Pope, that the lighter literature of England, in the beginning of the past century, chiefly exercises influence on the present. His writings have stood the test of time. The monument of his fame is "a solid fabric, and will support the laurels that adorn it." The controversialist, who would point a period, resorts to his satires. The philosopher, who would clothe an apothegm, borrows from his essay.—And—what perhaps is the highest praise of all—his lines, his sparkling phrases, have passed into the current language of the day, and become household terms.—[American Monthly.]

Increase of Law Books.—About 1717, Dean Swift, in one of his pamphlets, remarks "the great increase of law-books," and asked, "what would become of lawyers, if their libraries kept on increasing for a century, at such a rate?"—Law books have kept on increasing, in more than a geometrical ratio, and of their increase there is no end. The Dean's question was a sensible one, and seemed to admit of no answer. Neither did his question as to what posterity would do with the national debt of England, which then amounted to fifty millions sterling. But the course of human events is more incredible than fiction, and inscrutable to human philosophy.

When Swift's inquiry was made, Blackstone had not written and Mansfield had not decreed.—Since then, the Parliament of England has been pouring forth laws, regularly as the course of the seasons, and copiously as the autumnal harvests. These are in the lawyers' library.—Since then, the Court of Chancery, which, grim as Cerberus, met the hapless adventurer in the caverns of the law, has, like that gentleman, (as Mrs. Malaprop called him) been divided into three heads—videlicit, the Rolls—the Vice-Chancery—the High Court of Chancery, and from each have been gathered volumes:—and these are in our lawyers' library!—The king's Bench—the Common Pleas—the Exchequer—The Doctors' Commons—the Admiralty—have, for a hundred years, been shedding edicts, numerous as the Sibyl's leaves, and equally lucid—but, alas! not scattered like hers, but bound in calf-skin books—and these are in our lawyers' library!—But this is not all. On this side of the Atlantic, four-and-twenty legislatures, all in a row, are annually, like so many grist-mills, grinding forth laws; and one or two, three, or four judicial tri-

bunals in each State are, every year, publishing their decisions, to be bound in yellow leather for the lawyers' library.

Patient reader! we are not through yet. The Bar partakes the mania of the Bench. *Scribimus docti, indoctique.* Essays and treatises, and criticisms, and strictures, and arguments, have been every year extorted from the wearied press, in numbers that would frighten *Magliabechi* himself; yet must every lawyer have these in his library!

We postpone to some other time, all remarks on the wisdom and benefit of the legal system; our object being merely to show in this respect, the contrast of the present and the past century; but what would the Dean of St. Patrick say to the prodigies, to which we have feebly alluded? He would probably acknowledge that the imagination which conceived the idea of Brobdignag, was inadequate to comprehend the magnitude of the legal science: or, more probably, he would add a chapter to his Voyage to Laputa, and place our law-makers, and law-expounders, by the side of those useful philosophers who discovered and practised the wondrous art of extracting sunbeams from cucumbers.—[American Monthly.]

SUBMARINE VOLCANOES—are those which break out from the bottom of the sea, and which tossing their lava higher and higher, sometimes gradually, and at others instantly, raise islands, where before nothing obstructed the billows of the ocean. They are preceded by violent agitations of the water, and the discharge of gas, smoke, and vapors; these are often on fire, and roll and sweep in fearful sheets of flame over the waters. Stones are cast up—the crater often peers above the surface, and either remains after the eruption has subsided, or sinks again into the abyss. The volcanic islands, generally, are supposed to have been raised from the bed of the ocean in this way. A soil ultimately accumulates upon them, and the decomposition of the lava itself, gradually furnishes sufficient for vegetation. A great number of islands have been cast up in this manner, within comparatively a few years. Most of them have again sunk, though some remain. Dr. Webster, to whose work we have before referred, gives a full account of that which rose near St. Michaels, in the Azores; and one which appeared in the Mediterranean in 1831, is described in a very interesting manner by Dr. Dekay, in his work recently published.

Such has been, doubtless, the origin of many of the islands of the Atlantic and Pacific. In the Grecian Archipelago, very many of the islands bear strong marks of volcanic action. The same is true of the Canaries, Teneriffe, the Cape de Verdes, the Lipari islands, the Azores, Ascension island, St. Helena, the Isles of France, and Bourbon, the Aleutian islands south of Bhering's straits, the Kurile, the Philippines, or Sandwich, and other immense ranges occupying the Pacific and Indian oceans. In the West Indies, Trinidad, Granada, St. Vincent, St. Lucia, Martinique, Dominica, Gaudaloupe, Montserrat, Nevis, St. Eustatia, and many others, all give unquestionable evidence of their ancient volcanic character and origin.

Captain Basil Hall, who is perhaps better authority on the subject of volcanoes than of republics, states the Loo-Choo islands, in the China Sea, to be volcanic in their origin; and that he saw one peak just rising above the water, which had every appearance of an extinguished crater.

The Volcanoes of Mexico.—In Mexico, a chain of volcanoes traverses the country from east to west, being at right angles with the great range of mountains which runs through it; that of Tuxtla, near Vera Cruz, had an eruption in 1793, and the ashes were carried upwards of one hundred and seventy miles. West of this lies Orizaba, seventeen thousand three hundred feet high, and Popocatepetel, seventeen thousand six hundred feet high—being the greatest elevation in Mexico. It has been in action for three hundred years, but has emitted nothing more than smoke and ashes. On the west of the city of Mexico lie the volcanoes of Jorullo and Colima, and a vast extent of the plains beyond give evident indication of volcanic fire beneath their surface. Humboldt, in speaking of these plains, says that "in the month of June, 1759, a subterraneous noise was heard. Hollow sounds, of the most alarming nature, were accompanied by frequent earthquakes, which succeeded each other from fifty to sixty days, to the great consternation of the inhabitants; for about a month all was again quiet, when on the night of the 28th September, the horrible subterranean noise recommenced. The affrighted Indians fled to the mountains of Aguasarca; *a tract of ground, from three to four square miles in extent rose up in the shape of a bladder.* The bounds of this convulsion are still distinguishable from the fractured strata."

Those who witnessed this great catastrophe from the top of Aguasarca, assert that the flames burst forth over a surface of more than half a square league; that fragments of burning rocks were thrown to a prodigious height, and that through a thick cloud of ashes, illuminated by volcanic fire, the softened surface of the earth was seen to swell up like an agitated sea. The rivers of Cuitimba and San Pedro, precipitated themselves into the burning chasms; the flames were rendered more violent by the decomposition of the water, and were visible at an immense distance." The whole surface is now covered with thousands of small canes, from six to ten feet in height, called by the Indians *ovens*, from which heated vahors ascend to the height of from twenty-two to thirty-two feet.—[American Monthly Magazine.]

Patriotic Liberality.—We have great pleasure in communicating the fact, that Lieut. Burnes, the intrepid and enterprising traveller, has just presented to the trustees of the British Museum the whole of the coins collected by him in the course of his travels into Bokhara. They consist of upwards of two hundred Bactrian, Indo-Grecian, Indo-Scythic, Hindoo, and Muhammedan coins. In short, the collection is unique. An especial vote of thanks from the trustees has been given to our gallant countryman for his splended donation.

Epizootia.—This pestilence, so fatal to cattle, has ravaged Moravia and many parts of the Austrian empire with extraordinary mortality. In many places whole herds have perished. Would not the investigation of its *cause* be a subject worthy of the best attention of our various scientific institutions—medical, botanical, entomological?

[*From the American Monthly Magazine.*]

TO ——.

I left thee—nor did seem to grieve—
I breathed no sad nor wild farewell;
But ah! more deep, more keen, believe,
The grief I reck'd not how to tell.

The cold in studied phrase may whine
Of parting pang, or rapture's thrill;
But heart as fond, as true as mine,
When deepest moved, then most is still.

And why should language vainly seek
To paint the wo it ne'er reveals?
The heart—the heart can never speak—
The tongue but mocks the grief it feels.

Oh then, untold, thou wilt not deem
Unfelt the pang such partings bring—
Most swift the tide when calm the stream,
And saddest birds but rarely sing. M. L.

RAILROAD CASTINGS.

MANY & WARD, Proprietors of the Albany Eagle Air Furnace and Machine Shop, will make to order car wheels, chairs and knees, and every other description of castings required for railroads. R-1y feb14

PATENT HAMMERED SHIP, BOAT, AND RAILROAD SPIKES.

☞ Railroad Spikes of every description required, made at the Albany Spike Factory.

Spikes made at the above Factory are recommended to the public as superior to any thing of the kind now in use

Ship and Boat Spikes made full size under the head, so as not to admit water.

Orders may be addressed to Messrs ERASTUS CORNING & CO., Albany, or to THOMAS TURNER, at the Factory, Troy, N Y. sept.13-1y

RAILWAY IRON.

95 tons of 1	inch by	½ inch,	*Flat Bars* in lengths o	
200 do.	1½ do.	½ do.	14 to 15 feet, counter sunk	
40 do.	1½ do.	¾ do.	holes, ends cut at an angle	
300 do.	2 do.	½ do.	of 45 degrees, with spl-	
300 do.	2½ do.	¾ do.	cing plates and nails to	
soon expected.			suit.	

250 do. of Edge Rails of 36 lbs. per yard, with the requisite chairs, keys and pins.

Wrought Iron Rims of 30, 33, and 36 inches diameter for Wheels of Railway Cars, and of 60 inches diameter for Locomotive Wheels

Axles of 2½, 2⅝, 2¾, 3, 3¼, 3½, and 3¾ inches diameter for Railway Cars and Locomotives of patent iron.

The above will be sold free of duty, to State Governments and Incorporated Governments, and the Drawback taken in part payment. A. & G. RALSTON.

9 South Front street, Philadelphia.

Models and samples of all the different kinds of Rails, Chairs, Pins, Wedges, Spikes, and Splicing Plates, in use both in this country and Great Britain, will be exhibited to those disposed to examine them. d7imeowr

STEPHENSON,

Builder of a superior style of Passenger Cars for Railroad,

No. 364 Elizabeth street, near Bleecker street, New-York.

☞ RAILROAD COMPANIES would do well to examine these Cars; a specimen of which may be seen on that part of the New-York and Harlæm Railroad now in operation. J25 tf

RAILROAD CAR WHEELS AND BOXES,

AND OTHER RAILROAD CASTINGS.

☞ Also, AXLES furnished and fitted to wheels complete at the Jefferson Cotton and Wool Machine Factory and Foundry, Paterson, N. J. All orders addressed to the subscribers at Paterson, or 60 Wall street, New-York, will be promptly attended to.

Also, CAR SPRINGS.

Also, Flange Tires turned complete.

J8 ROGERS, KETCHUM & GROSVENOR

NOTICE TO MANUFACTURERS.

☞ SIMON FAIRMAN, of the village of Lansingburgh, in the county of Rensselaer, and state of New-York, has invented and put in operation a Machine for making Wrought Nails with square points. This machine will make about sixty 6d nails, and about forty 10d nails in a minute, and in the same proportion larger sizes, even to spikes for ships. The nail is hammered and comes from the machine completely heated to radness, that its capacity for being clenched is good and sure. One horse power is sufficient to drive one machine, and may easily be applied where such power for driving machinery is in operation. Said Fairman will make, vend and warrant machines as above, to any persons who may apply for them as soon as they may be made, and on the most reasonable terms. He also desires to sell one half of his patent right for the use of said machines throughout the United States. Any person desiring further information, or to purchase, will please to call at the machine shop of Mr. John Humphrey, in the village of Lansingburgh.

August 15, 1833. A29tf RM&F

SURVEYORS' INSTRUMENTS.

☞ Compasses of various sizes and of superior quality warranted.

Leveling Instruments, large and small sizes, with high magnifying powers with glasses made by Troughton, together with a large assortment of Engineering Instruments, manufactured and sold by

E. & G. W. BLUNT, 154 Water street, corner of Maiden lane.

J31 6t

SURVEYING AND ENGINEERING INSTRUMENTS.

☞ The subscriber manufactures all kinds of Instruments in his profession, warranted equal, if not superior, in principles of costruction and workmanship to any imported or manufactured in the United States; several of which are entirely *new*, among which are an Improved Compass, with a Telescope attached, by which angles can be taken with or without the use of the needle, with perfect accuracy—also a Railroad Goniometer, with two Telescopes—and a Leveling Instrument, with a Goniometer attached, particularly adapted to Railroad purposes.

WM. J. YOUNG,
Mathematical Instrument Maker,
No. 9 Dock st., Philadelphia.

The following recommendations are respectfully submitted to Engineers, Surveyors, and others interested.

Baltimore, 1832.

In reply to thy inquiries respecting the instruments manufactured by thee, now in use on the Baltimore and Ohio Railroad, I cheerfully furnish thee the following information. The whole number of Levels now in possession of the department of construction of thy make is seven The whole nun ber of the "Improved Compass" is eight These are all exclusive of the number in the service of the Engineer and Graduation Department.

Both Levels and Compasses are in good repair. They have in fact needed but little repairs, except from accidents to which all instruments of the kind are liable.

I have found that thy patterns for the levels and compasses have been preferred by my assistants generally, to any others in use, and the Improved Compass is superior to any other description of Goniometer that we have yet tried in laying the rails on this Road.

This instrument, more recently improved with a reversing telescope, in place of the vane sights, leaves the engineer scarcely any thing to desire in the formation or convenience of the Compass. It is indeed the most completely adapted to lateral angles of any simple and cheap instrument that I have yet seen, and I cannot but believe it will be preferred to all others now in use for laying of rails—and in fact, when known, I think it will be as highly appreciated for common surveying.

Respectfully thy friend,
JAMES P. STABLER, Sup't of Construction of Baltimore and Ohio Railroad.

Philadelphia, February, 1833.

Having for the last two years made constant use of Mr. Young's "Patent Improved Compass," I can safely say I believe it to be much superior to any other instrument of the kind, now in use, and as such most cheerfully recommend it to Engineers and Surveyors.

E. H. GILL, Civil Engineer.

Germantown, February, 1833.

For a year past I have used Instruments made by Mr. W. J. Young, of Philadelphia, in which he has combined the properties of a Theodolite with the common Level.

I consider these Instruments admirably calculated for laying out Railroads, and can recommend them to the notice of Engineers as preferable to any others for that purpose.

HENRY R. CAMPBELL, Eng. Philad. Germant. and Norriat. Railroad

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PRICES OF RAILROAD STOCKS,

At the New-York Stock and Exchange Board,

APRIL 17, 1835.

	Par.	Ask.	Offer.
Mohawk and Hudson.....	100	118½	118
Paterson.....	50	107	107
Saratoga.....	—	108	108
Harlem.....	—	93	89
Boston and Providence....	100	118	118
New-Jersey Railroad and Transportation Line...	100	—	—
Camden and Amboy.....	100	—	—
Providence and Stonington.	100	100½	100½
Boston and Worcester.....	—	108	109
Philadelphia and Trenton..	100	102	102
Utica and Schenectady....	100	108	108
Jamaica.....	—	106	106

Schuylkill Canal.—During the week ending April the 7th, 1834, the amount of toll received on this valuable work was $2,191 68.—During the present season the Canal opened on the17th of March, and the receipts of the toll for the week ending the 3d inst. amount to $9,722 04, or more than FOUR TIMES as much as during the same period of the preceding year.—[Philadelphia Commercial Herald.]

Union Canal.—This important link in our great chain of internal improvements, opened for the season on the 19th ult. and is now in excellent navigable order. The best evidence that we can furnish of the prosperity of this work, is to state that during the week ending the 31 inst., the amount of toll received was $4,526 65.—[Philadelphia Commercial Herald.]

Arrival from Pittsburg.—Yesterday the Canal Boat, Sarah Tiers, belonging to the Pittsburg Transportation Line, arrived at their Warehouse, Chesnut street wharf, Schuylkill, freighted with a full cargo from Pittsburg; being the first arrival this season by the Canals and Railroad.—[Philadelphia paper.]

There is a very spirited competition between the Railroad and the new line of stages established by Stockton and Stokes on the Turnpike Road between this city and Baltimore. We now get the Baltimore newspapers several hours earlier by the stages than we have heretofore received them by the cars. The Railroad Company have brought one of their "big tea-kettles," over the Ridge, and intend, we understand, to employ steam on the whole road between Frederick and Baltimore.—[Frederick, M. D. Examiner.]

[*From the National Intelligencer.*]

TO THE EDITORS.—Gentlemen: I am sure that it will be very acceptable intelligence to many of your readers to know that the Engineer reports the completion of the Chesapeake and Ohio Canal to a point eight miles above Williamsport, (being 110 miles from this city,) so far as to open it for trade.

Sixty boats, loaded with Flour, Coal, &c., had descended the Lock below Williamsport, and forty more were about to pass that point on the 9th inst. So that, if no accident should occur to the new work below that point, we may in a day or two hope to see some of this produce of the Allegany Mountain at our doors. A.

Washington, April 11.

RICHMOND AND POTOMAC RAIL ROAD.—The Whig of yesterday states, on the authority of one of the directors of this work, "that notwithstanding the severe and protracted winter, the work is progressing well. The earth work is getting in a considerable state of forwardness, and the bridges and culverts, some of which are already begun, will soon be in an active state of progression. In most places, good quarries of suitable stone have been found very near the places where they were wanted. Nearly all the timber for the superstructure has been cut while the sap is yet down, and much of it has been prepared and put along the line where it will be used. Without some unforseen hindrance, the Locomotive will probably be on 25 or 30 miles of the road by the 1st of Dec. next.—*Compiler.*

The Railroad.—All is complete to the Nottoway, except the laying down of the iron rails, which is progressing at the rate of a mile a day, and the road will be ready for the passage of cars to that river by the first of May, when 42 miles will have been finished. The bridge across the Nottoway is nearly completed.—[Norfolk Herald.]

James and Kenawha Improvement.—The Second Auditor gives notice that 32,132 shares of the stock of this company have been subscribed for, by individuals and body corporate and politic, other than the commonwealth, and that the President and Directors of the James River Company will proceed on the 1st day of May next, to ascertain the amount of valid subscriptions—that is the subscriptions, upon which a payment of *one dollar*, per share, has been paid, pursuant to the act of 20th February last.—[Arena.]

Something New.—The Pittsburgh Gazette notices, under the above head, a machine lately invented and put in operation in the Northern Liberties of that city, for preparing stone for M'Adamized roads. That paper says, the machine is simple and substantial in its structure, and very expeditious and powerful in its operation. It adds on the authority of Mr. Davis, the inventor, that two men and two boys could do as much work with the aid of this machine, as ten men working in the usual manner. It may be worked either by steam or horse power. The Gazette observes in conclusion. We think that Turnpike or M'Adamized road companies in the country would find great advantage in the use of this machine.

RAILROAD JOURNAL AND ADVOCATE OF INTERNAL IMPROVEMENTS.

This work is published once a week, in quarto form of EIGHT pages, devoted mainly to the subject of internal improvements, in all its various modes and forms.

Three volumes were completed in December, 1834, and the 4th volume is now in progress.

Terms, $3 a year, IN ADVANCE. Previous volumes same price; full sett of four volumes, $12.

RAILROAD AND CANAL MAP,

Or a Map of the United States, 24 by 40 inches, on which is delineated all the Railroads and Canals in use, or in course of construction, and most of those in contemplation; together with a concise description of, or reference to, each, and containing over 70 pages of letter press. The map is on bank note paper, and put up in pocket form, with morocco cover, or in paper cover, and may be sent by mail to any part of the country. Price $2.

MECHANICS' MAGAZINE, AND REGISTER OF INVENTIONS AND IMPROVEMENTS.

This work has completed 4 volumes, or two years. It is published monthly, in numbers of 64 pages each, in large octavo form, and forms two good sized volumes a year, of 384 pages each.

This work is STEREOTYPED from the first number, and therefore any number of copies may be obtained from commencement, if desired. It has many able correspondents, who furnish original communications, in addition to its selections from the best European periodicals of the day, with numerous engravings and illustrations of the subjects on which it treats. The Mechanics' Magazine may be considered as one of the permanent periodicals of the country. Price, $3 per annum, IN ADVANCE. Previous volumes $2,50 each.

THE APPRENTICE'S COMPANION—

A monthly publication, in large octavo form, of sixteen pages each number—designed to *persuade* APPRENTICES, and others, to habits of INDUSTRY, TEMPERANCE, and FRUGALITY—is published at the office of the MECHANICS' MAGAZINE, No. 35 Wall street, New-York, for FIFTY CENTS a year—for 12 numbers—by D. K. MINOR.

*** All letters must be postage paid. Eleven numbers sent to one address for $5,—and TWENTY-THREE for $10. D. K. M.

NEW-YORK FARMER AND AMERICAN GARDENER'S MAGAZINE.

This work is devoted mainly to AGRICULTURE and HORTICULTURE; it, however, treats upon various other subjects more or less connected with them. It is now in its 8th volume, or 3d volume, new series, and is designed to be made equal to any work of the kind in this or any other country. No reasonable expense will be spared, either to secure the best writers the country affords, or to furnish engravings and illustrations. It is published monthly in large octavo, 32 pages per month, at $3 per annum, and *when paid in advance* eight *additional* pages per month are given. Volumes 6 and 7, or 1 and 2, new series, $3 per volume.

QUARTERLY JOURNAL OF AGRICULTURE, MECHANICS, AND MANUFACTURES.

This work is composed of the choicest articles of the three preceding works; its character may therefore be understood by reading those advertisements. It has been published at $5, but will be, hereafter, at $4 per annum—always in advance; each quarterly number to contain about 220 pages.

These works may all, or either of them, be had of S. Blydenburgh, 96 North Pearl street, Albany; D. Hale, 124 Washington street, Boston; Fessenden, Philadelphia; or of the Proprietor and Publisher,

D. K. MINOR,
35 Wall street, New-York.

GOLD REGION OF THE UNITED STATES.

☞ Now in press and will be published in a few days the first of a series of numbers, giving a minute and particular description of the entire *Gold Region of the United States.*

Each number will be accompanied by a Map, on which will be laid down, and numbered, with owner's name, in the order of discovery, of every Gold Mine within the district of which the number treats, so that any person can ascertain the location, owner's name, and *condition*, as late as January 1, 1835, of every Gold Mine, or place where gold has been discovered in the United States.

The first number, which will be issued by the 20th of April, will give the Gold region of North Carolina: together with a very interesting Essay, upon the Gold region of the United States, from the transactions of the Geological Society of Pennsylvania, by JAMES DICKSON, Esq., F. G. S. of London, C. M. G. S. of Pennsylvania, &c. &c.—With other interesting and important information in relation to the supply and consumption of Gold.

The information and maps are by a scientific gentleman, who has visited personally what he describes.

No. 2, including the States of Virginia and Maryland, will be published by the first, or during the month of, June.

No. 3, giving Pennsylvania, New Jersey and New York, by the first of August. And the succeeding numbers, 4 and 5, which will probably complete the series, by the first of January next.

The terms will be $1 per number, or $5 for the Series.—Subscriptions addressed to D. K. MINOR, or to the publishers, T. & C. WOOD.
No. 7 Wall street.

*** Gentlemen who may have particulars, or details, of present condition of mines in North Carolina, will oblige me by communicating the same, that the work may be as complete as possible. D. K MINOR.

MILL DAM FOUNDRY FOR SALE,

☞ The Proprietors of the Mill Dam Foundry offer for sale or lease their well known establishment, situated one mile from Boston. The improvements consist of

No. 1. *Boiler House*, 50 feet by 30 feet, containing all the necessary machinery for making boilers for *Locomotive* and other steam Engines.

No. 2. *Blacksmith's Shop*, 50 feet by 20, fitted with cranes for heavy work.

No. 3. *Locomotive House*, 54 feet by 25, used for putting together Locomotive Engines. Several of the best Engines in use in the United States have been put in this establishment.

No. 4. A three story brick building, covered with slate, 120 feet by 46, containing two water-wheels, equal to 40 horse power; Machine Shop, filled with lathes, &c; Pattern Shop; Rolling Mill and Furnaces, capable of rolling 4 tons of iron per diem, exclusive of other work; three Trip Hammers, one of which is very large; Engine for blowing Cupola Furnaces, moved by water-wheel; one very superior 12 horse Steam Engine, which could be dispensed with; and a variety of other machinery.

No. 5. An Iron Foundry, 80 feet by 45, with a superior air Furnace and two Cupolas, Core oven, Cranes, &c. fitted for the largest work. Attached to the Foundry is a large ware-house, containing Patterns for the Castings of Hydraulic Presses, Locomotive and other Steam Engines Lead Mill Rolls, Geering, Shafts, Stoves, Grates, &c. &c. These were made of the most durable materials, under the direction of a very scientific and practical Engineer, and are supposed to be of great value.

No. 6. A building, 65 feet by 36, containing a large stack of chimneys, and furnaces, for making Cast Steel. This building is at present used as a boarding house, and can accommodate a large number of men.

No. 7. A range of buildings, 200 feet long by 36, containing counting room, several store rooms, a Brass Foundry, room for cleaning castings, a large loft for storing patterns, stable for two horses, &c. &c.

The above establishment being on tide water, presents greater advantages for some kinds of business than any other in the United States. Coal and Iron can be carried from vessels in the harbors of Boston, to the wharf in front of the Factory, at 25 to 30 cents per ton. Some of the largest jobs of Iron work have been completed at this establishment; among others, the great chain and lift pumps for freeing the Dry Dock at the Navy Yard Charleston.

The situation for Railroad work is excellent, being in the angle formed by the crossing of the Providence and Worcester Railroads. The Locomotive "Yankee," now running on the latter road, and the "Jonathan," purchased by the State of Pennsylvania, were built at these works. With the Patterns and Machinery now in the premises, 12 Locomotives and as many tenders, besides a great quantity of cars and waggons, could be made per annum.

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